

# FLIGHT

The  
AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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## Flight

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## EDITORIAL COMMENT



UNDER the style of "The Air Post of Banks, Ltd.," a new and ambitious enterprise is announced for the development of air transport between this country and abroad. It is understood that one of the principal objects of the new company is the carriage of valuable securities for the London and Continental banks, while arrangements are being made for what is described as an ultra-rapid transport service for passengers and goods by air, steamship, motor and rail. Daily all-weather services to Paris and beyond are projected, and the scheme seems to be one for a general linking up of all means of transport. That is to say, the passenger who has Cairo as his goal can go by air to Paris, where another machine will take him on to Neuchâtel. From thence to Milan he can proceed by rail, and there take to the air again as far as Bologna, the remainder of his journey being made by train to Brindisi, from whence he will go by steamer to Alexandria, completing the trip by way of the Egyptian railways. All this at the moment sounds somewhat involved, and there may be some who may doubt whether things have got sufficiently forward as yet to ensure success. But before we pronounce upon this side of the question we must recollect that aerial communications are still in their first infancy, and that before very long the traveller will actually be able, as just an ordinary event, to make the whole journey from London to Rome by air. At the moment it does not seem certain that any services are actually projected between the capital and the south of Italy. None are shown as being in process of organisation, but there is no reasonable doubt that before many months are past the one who desires to make this journey will be able to do so by air as far as Athens, which will reduce the time and space of the sea trip to a minimum. As a matter of fact, we believe that within the next twelve months it will be possible to carry out the whole journey by means of regular aerial services.

These things being so, the enterprise of the Air

### DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

Sept.	...	Air Ministry Amphibian Competition, Felixstowe and Martlesham
Sept. 28	...	Gordon-Bennett Aviation Cup, France
Oct. 7	...	Lecture on "Civil Aviation," by Sir F. H. Sykes
Oct. 8, 9, 10	...	A.C.F. Meeting at Buc
Oct. 12, 13 and 14	...	Air Ministry Conference, Council Chamber, Guildhall
Oct. 21	...	Lecture, "A Comparison of the Flying Qualities of Single and Twin-Engined Aeroplanes," by Squadron-Leader R. H. Hill
Oct. 23	...	Gordon-Bennett Balloon Race, Indianapolis, U.S.A.
Oct. or Nov.	...	U.S. National Aeroplane Race (New York to San Francisco)
Nov. 1	...	First Open Competition for R.A.F. Boy Mechanics

Post of Banks, so far from being in advance of the time, is simply a far-sighted attempt to intelligently anticipate the course of future aerial events, and as such we wish it all good fortune.

## Are We Being Left Behind?

We publish elsewhere a map, compiled and issued by Messrs. Handley Page, Ltd., showing with considerable clearness the way in which commercial flying is developing on the Continent of Europe and the comparative backwardness of this country. A glance at the map shows that we have but two regular services in operation, the one from London to Paris and the other by way of Calais to Brussels and Holland. There is considerable traffic on these two routes. As a matter of fact, they are probably the two most traversed routes in existence, but it should be remembered that even two such busy routes as these do not constitute any great sign of development. It is when we come to contrast our own condition with that of others that we are bound to feel a certain amount of misgiving as to what the future may hold for us. From Paris radiate six actual routes, in full operation, while three others are marked on the map as projected—and from what we know of French enterprise we may be very sure that it will be but a short time before these projected routes will fall to be marked as actually being covered by air transport. Berlin has seven routes in being and two projected. How much actual flying is being done on these we do not know at the moment, but we are assured that commercial aviation is a very hardy growth in the land of our late enemies. Munich has three actual services; Prague one actual and three projected; Dresden three in being and another projected; Hamburg four and one respectively. Any number of towns in France, Italy and Germany have one or more services in operation, with more to follow.

While every allowance must be made for the greater suitability of the Continental countries for aerial transport, it is greatly to be deplored that we seem so indifferent to the possibilities which our late and quite possibly future enemies, to say nothing of our friends and Allies, have so readily grasped. The root of the trouble is that we do not appear to have any definite air policy, and that fact is alone responsible for the relegation of this country to the position of a third-class aerial power. At the end of the War we were unquestionably supreme in the air. Immediately after the end of the War the group of Parliamentary members who had made a speciality of aerial matters tried very hard to push the Government up to some sort of definite policy. They did not, as we know, succeed to any extent, and they now appear to have given up the task in disgust. Private enterprise has done a good deal, but it cannot make much headway against the supineness of a Government without a policy. The department of the Controller-General of Civil Aviation is starved for funds, though it is doing what it can, but the two together cannot make civil aviation a real factor in the commercial life of the nation unless they have the State behind them to a far greater extent than it is at present. Apart altogether from all questions of commerce, the future of aviation is indissolubly bound up with the future safety of the nation and the Empire. Without a strong potential aerial arm we cannot continue to exist and, as we have pointed out on many occasions, the only way in which we can obtain the requisite

strength for safety lies in the direct encouragement of the civilian side in order that we may build up a powerful reserve to the active Air Force for use in the day of necessity. We say with a due sense of responsibility that the Government is false to the trust reposed in it by the nation for that it neglects the very fundamentals of Imperial defence. A former Government acted thus and involved us in a war which is too recently ended for us to be ignorant of what unpreparedness cost in life and treasure. Some of those who were directly responsible for that unpreparedness still hold high office under the Crown. There lies the trouble. Our politicians are so busy in looking after their own interests and those of their limpet friends that they have no time to look to the real interest of the Empire. They know there is no penalty to be exacted for their misfeasance of office and are thus able to go on their way with rejoicing and in a perfect sense of security.

The Air Congress, to which we have previously referred, is to meet in London at the Guildhall on the 12th, 13th and 14th of October. It has been called by the Air Council to examine the present position of flying and to bring about an exchange of opinions. The programme of the proceedings of the three days is given elsewhere this week.

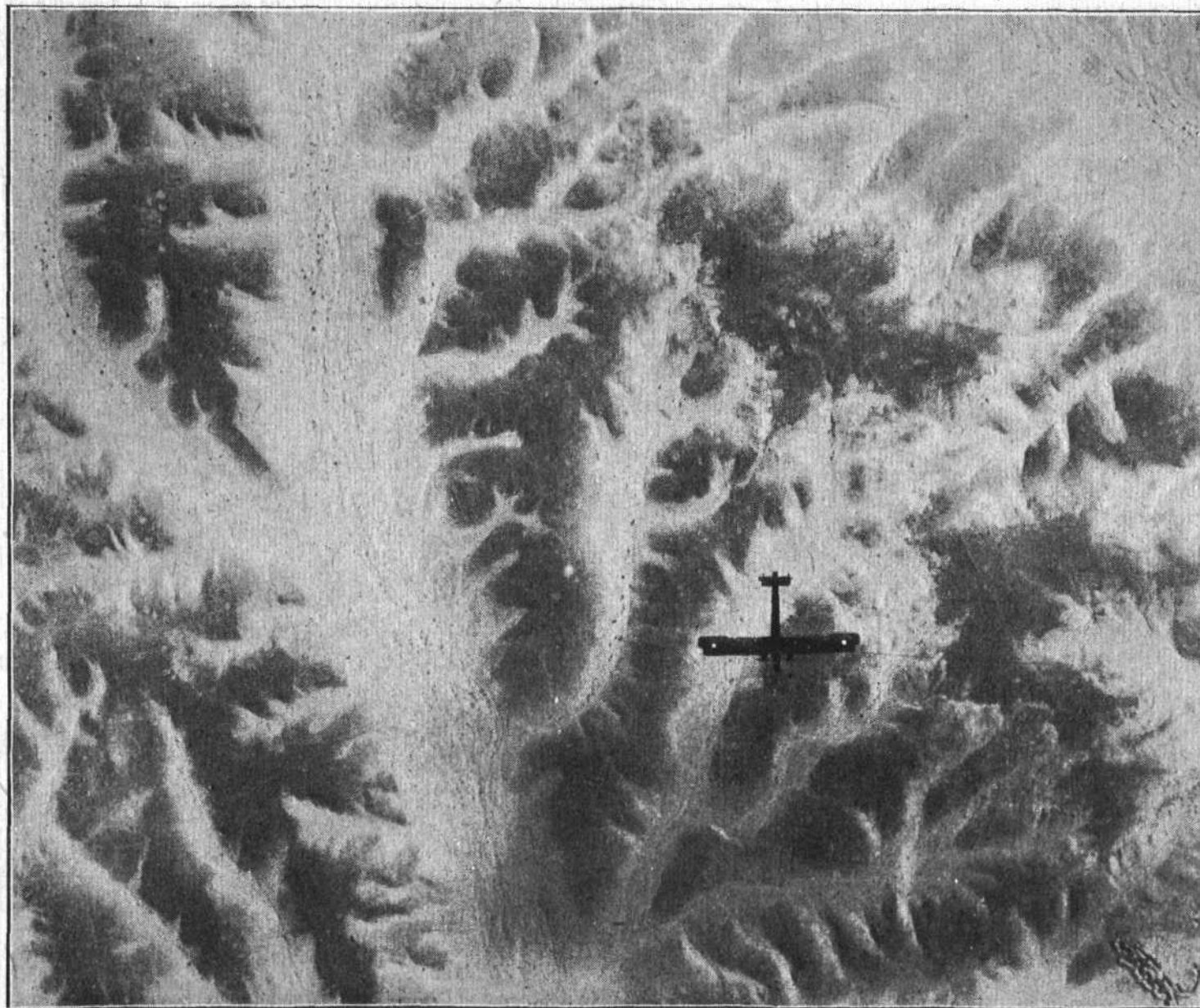
Nothing but good can come of such a conference, which will be of inestimable use in focussing attention on the present position of the industry and of aviation generally, civil and military. One of the worst disabilities under which the whole movement labours is that the general public has very little grasp of the subject and fails completely to understand the true meaning of air power in relation to the problems of the Empire, whether military or commercial. To a great extent this is also true of the Press, which, while it has endeavoured to do a great deal for flying, still fails to achieve its objects through want of complete knowledge of the subject. This is in no sense a reproach, since it is not to be expected that, aviation being new in comparison as it is, the full grasp of all it means can be acquired in a relatively short time without special and detailed study of the subject, which is, after all, a highly specialised one. The Air Congress will undoubtedly prove of high educational value, and must lead to a far better appreciation of the problems which beset the industry and their bearing on questions of commercial supremacy and Imperial defence.

## Canadian Government Enterprise

More than any other of the Overseas Dominions, Canada has manifested a marked interest in the development of aviation, civil and military, and while others have virtually stood still since the end of the War, the Canadian Government, with wise prescience, has carefully fostered and encouraged the movement. It is now announced that as the war machines now in possession of the Government become obsolete it is the intention to replace them with the most modern commercial machines available. Detailed specifications of the types of machines required have been published and are reprinted on another page of this issue of FLIGHT. The outline policy of the Canadian Air Board is to purchase one each of several types of aircraft and, after



## The Camera and the 'Plane



Over the Egyptian desert, showing a plan view of a Handley Page in the mid-distance. Note the scrubby shrubs which dot the water-gullies in the sand



exhaustive tests, to standardise the types and order in quantities.

Aircraft, it is set forth in the official memorandum on the subject, will be used very extensively in opening up and developing comparatively unexplored land. Their work will fall into two main categories—photographic exploration and forest protection. The requirements which the Canadian Air Board considers essential are fully set forth in the memorandum already referred to. They are severe, as is called for by the nature of the work to be assigned to them, but not impossibly so. Indeed, the specifications appear to be drawn with an eye to encouragement rather than, as is too often the case in these matters, with an almost obvious desire to deter designers from competing in the effort to obtain orders. They certainly seem to manifest a sincere attempt on the part of the Dominion Government and its advisers to take advantage of the facilities offered by aircraft for the exploration and development of difficult country.

The Government is to be greatly congratulated for its ready grasp of the possibilities of aircraft for opening up hitherto little known parts of the Dominion, which would in all probability lie fallow for many decades were it not for the progressiveness demonstrated by the new policy. If the latter is successful, as we have no doubt it must be, the Dominion will be laid under a debt to the aeroplane and the seaplane in the paying of which a struggling industry will benefit largely. There is not a little comfort, too, in the reflection that it will be the British industry which, initially at any rate, will mostly benefit. Canada created an aircraft industry during the War, but it was purely an emergency industry and never became fully fledged. In course of time she will probably be able to build all the aircraft she needs for her own use, but in the mean-

time she will probably have to draw her supplies either from ourselves or from America. It is something to be thankful for that the British industry—denied that measure of encouragement which was promised and which, after its services to the Empire during the War, it had a right to expect—has not fallen on such evil days that it cannot fulfil the demands that are likely to be made upon it by the northern Dominion, whose example we should very much like to see followed by others of our overseas possessions.

#### The Specification

In regard to the specifications issued by the Canadian Air Board these do not call for any comment except in one particular direction. The endurance asked for, it will be noticed, is 10 hours at cruising speed. In the case of the single-engined aeroplane this endurance is coupled with a demand for accommodation for three passengers in addition to the pilot, and a maximum speed of at least 120 m.p.h., all on one Rolls-Royce "Eagle" engine. Now to attain this speed an engine loading of approximately 10 lbs. per h.p. is all that can be allowed. After estimating the weight of petrol necessary for 10 hours' flying, the weight of pilot and passengers, and the weight of the engine itself, it is found that only a few hundred pounds remain for the weight of the machine itself. Frankly we think that either the endurance demand must be reduced, or the maximum speed lowered to about 100 m.p.h. before such a machine becomes a practical proposition. At 100 m.p.h. the power loading can be about 17 lbs. per h.p., which is a much more reasonable proposition, leaving a fair weight for the aeroplane itself. Failing to modify its requirements in one or other of the two directions indicated, we are afraid that the Canadian Air Board will have to wait a long time for tenders.

## THE AIR CONFERENCE, 1920

OWING to the rapidly-increasing importance of aviation, the variety and complexity of the problems facing those interested in its development, and the desirability of an examination of the present situation and a mutual exchange of opinions on the subject, it is now officially announced that the Air Council has decided to call together an Air Conference. Its more immediate object will be to bring representative members of *all sections of the community* into contact with the practical work being done today with a view to assisting future progress.

In view of the nature of this Conference, the Lord Mayor has kindly granted the Air Ministry permission to hold it in the Council Chamber of the Guildhall, London, and has also consented to open the proceedings on the first day. It will take place on October 12, 13 and 14, 1920, attendance being by invitation.

The following have kindly consented to take the Chair on the three days respectively:—

*First day:* The Lord Montagu of Beaulieu.

*Second day:* The Lord Weir of Eastwood.

*Third day:* Admiral of the Fleet, Earl Beatty.

*First Day.*—The subject for consideration on the first day will be Civil Aviation. One paper will be read by Major-General Sir Frederick Sykes, G.B.E., K.C.B., C.M.G., Controller-General of Civil Aviation, on the present situation of Civil Air Services,

British and foreign, the organisation necessary for success and the prospects for the future. A second will be read by Mr. H. White-Smith, C.B.E., Chairman of the Society of British Aircraft Constructors, dealing with the demands of Civil Aerial Services from the constructional point of view.

*Second Day.*—The second day will be devoted to technical questions affecting both the Civil and the Service sides of the Art. Papers will be read by Air-Vice-Marshal Sir E. L. Ellington, K.C.B., C.M.G., C.B.E., Director-General of Supply and Research, Air Ministry, on the development of aircraft, and by a representative of the Royal Aeronautical Society.

*Third Day.*—On the third day the broader aspects of Service Aviation will be dealt with at the morning session by Air-Marshal Sir H. M. Trenchard, Bart., K.C.B., D.S.O., Chief of the Air Staff, while the subject of Airships, with special reference to their construction and commercial operation, will be taken up in the afternoon by Commander Sir Trevor Dawson, R.N.

After each paper has been read the subject dealt with will be open to discussion by those present. These discussions, it is hoped, will be of value in disseminating a fuller knowledge of the advantages and possibilities of transport by air, and will lead to the more general employment of aircraft in the future.



# THE AIR MINISTRY SEAPLANE (AMPHIBIAN) COMPETITION

## THE MACHINES DESCRIBED

PROGRESS is now being made in the Air Ministry Competition for amphibian machines at Martlesham, near Woodbridge, Suffolk, and at Felixtowe. Three of the five machines originally entered for this competition have now arrived at Martlesham. Of the other two, the Beardmore W.B. IX all-metal flying boat has had to be scratched, as it has not been found possible to complete the machine in time. A description of this machine was published in our issue of September 2, 1920. The Saunders "Kittiwake," two 200 h.p. A.B.C. "Wasp II" engines, which was described in our issue of September 9, 1920, has been finished, but during a recent trial flight over the Solent it became necessary to alight in order to make certain adjustments, and in so doing the boat hull struck a submerged rock and was punctured. The damage is not, however, extensive, and it is hoped that the machine will be at Martlesham by the end of this week.

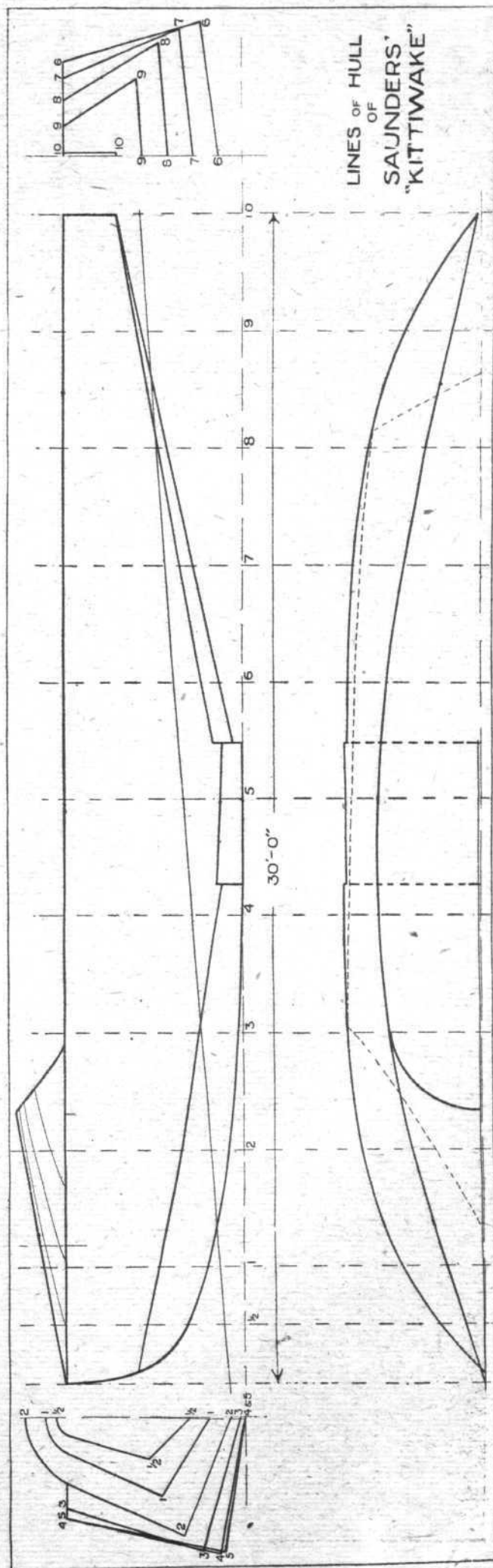
The three machines now at Martlesham are: The Fairey III amphibian float seaplane, 450 h.p. Napier "Lion" engine; the Supermarine Amphibian, 360 h.p. Rolls-Royce "Eagle" engine; and the Vickers "Viking" amphibian flying boat, 450 h.p. Napier "Lion" engine. The Vickers "Viking" was the only machine to arrive at Martlesham by the time specified, and has already passed several of its tests. Thus the reliability and economy test was passed some time ago, the corrected figure for  $\frac{W}{G}$  as issued by the Judges' Committee being

9.75. This was originally announced as 10.4, but even the final figure is excellent for a seaplane. On September 17 the Fairey seaplane did its economy and reliability test, obtaining a value of  $\frac{W}{G} = 8.5$ . In the getting-off tests the Vickers

used the small circle of 275 yards diameter, owing to the fact that her climb is such that the photographic height-recording apparatus could not have been used if the larger circle had been employed, as the machine would have been outside the field of the cameras. Her actual take-off was in 133 yards, and the height at which she cleared was 94 feet in the 275 yards circle, which is equivalent to 177 feet in the 400 yards circle. This machine has now also passed her slow-speed test, with a speed of 45.25 knots. The Supermarine has not, at the time of writing, had an opportunity of doing any but trial flights. On Thursday of last week advantage was taken of a couple of hours of sunshine following upon a rainy spell to try the machine with full load. It was thought that her own propeller might not be quite suitable, and so the kind and thoroughly sporting offer of the Vickers contingent of the loan of a spare propeller for the "Viking" was accepted. It was soon found, however, that this propeller did not suit the Supermarine at all, as was to be expected from the difference in power of the two engines and the much greater speed of the "Viking." After a short flight the old propeller was put back, and the machine got off very well with full load, although requiring a somewhat long run, which may be against her in the actual competition, but which is to be expected from her rather heavy loading. We rather think that in the sea-going part of the competition the Supermarine will do relatively better.

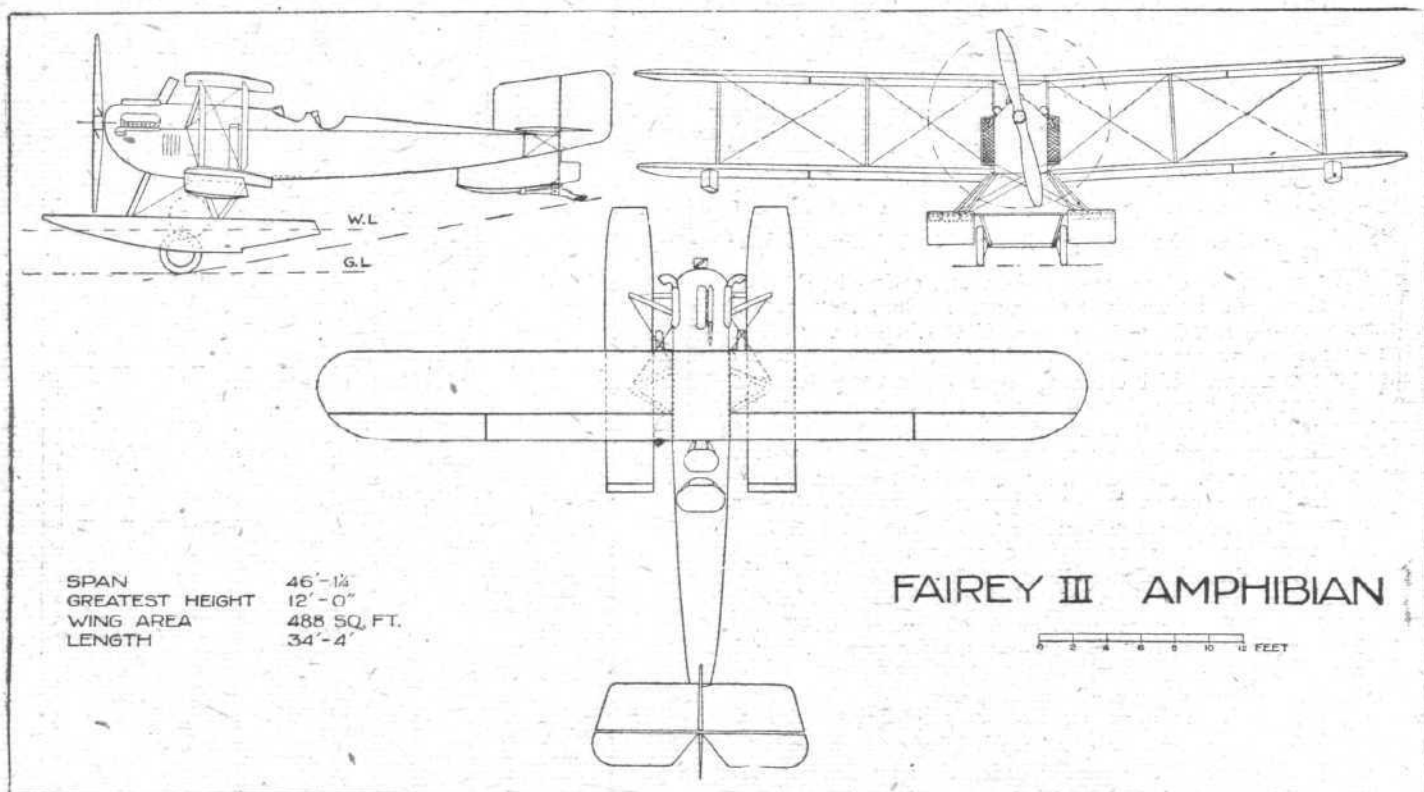
### The Machines

Reference has already been made to descriptions of the W.B. IX and Saunders "Kittiwake." The description of the latter is supplemented this week by a diagram showing the lines of the hull. The boat terminates, it will be seen, in a horizontal plane, along which is attached the cabin portion of the fuselage. The sides of the boat-hull proper slope inwards, tumble-home sides as our friends the Americans term them, and the bottom is of decided vee formation. The two steps are placed unusually close together, but we understand that in the model tests in the Froude tank no tendency to "porpoise" was noticed. As to how the hull will behave in a sea, this is a matter which full-size tests only can prove. It is not expected that any difficulty will be experienced on this score, and pilot and passengers are well protected against any spray. But for the unfortunate mishap in the Solent the other day, the "Kittiwake" would have been at Martlesham by now, and we sincerely hope that the damage is not of such a nature as to make repairs a very lengthy operation. The machine is of such extraordinary design in several ways that one looks forward to practical trials with more than ordinary interest. During the test flights she is said to have behaved very well, and her behaviour on land is expected to be equally good. Personally we are inclined to think that the wheel track is none too wide (6 ft. for a span of about 68 ft.), but as the lower plane is set at a large dihedral angle the track may prove sufficient. In any case the landing of an amphibian machine is a matter



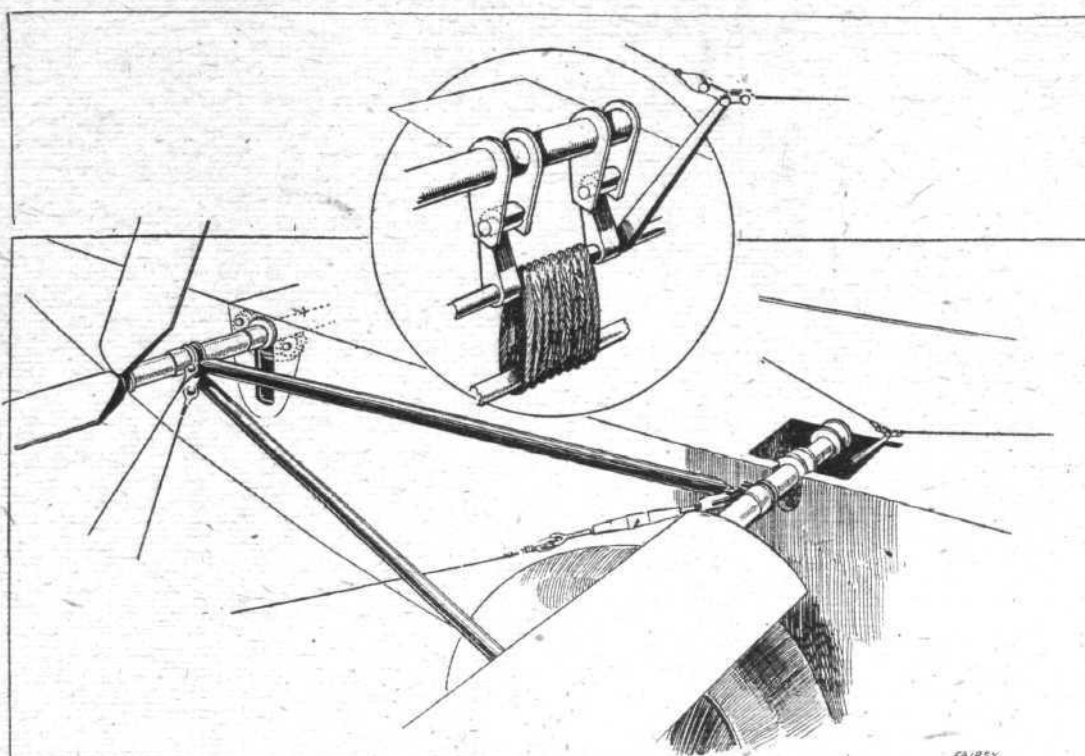


THE AIR MINISTRY COMPETITION : Three-quarter rear view of the Fairey III Amphibian float seaplane, 450 h.p. Napier "Lion" engine



THE FAIREY III AMPHIBIAN : Three-quarter front view





The Fairey sea-plane : Details of the amphibian gear

for skilful pilots always, and the " Kittiwake " will probably be found to do quite well in the hands of Capt. Macmillan.

**The Fairey III Amphibian Seaplane. 450 h.p. Napier " Lion. "**

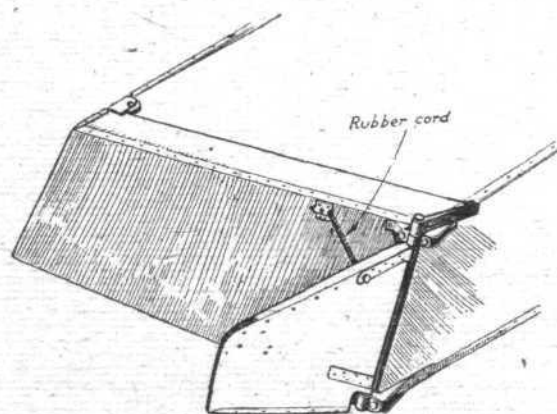
The machine entered by the Fairey Aviation Co. is similar in general lay-out to the well-known Fairey, Series III, except that the pilot sits aft of the centre section instead of between the planes. The passengers, who are placed side by side, occupy a cockpit aft of that of the pilot. A low wind-screen runs across the deck in front of their cockpit, otherwise they are free to look over the side and enjoy the view. There is no partition between the two bulkheads, the only division between them being the deck fairing.

The fuselage is a rectangular girder of ash members, covered with fabric except the front portion, which is an aluminium

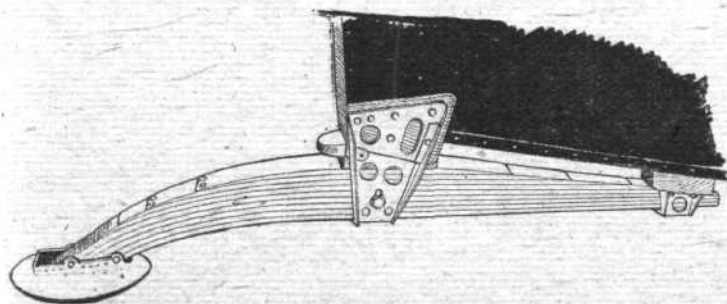
cowl around the Napier engine. The radiators are placed on the sides of the fuselage, and each has mounted on the sides of the body in front of it a hinged shutter, which for maximum cooling lies flat against the side of the body, while for minimum cooling it swings outwards, thus deflecting rather than blanketing the air. A starting handle for the engine projects on the starboard side, and in addition a mechanical starter is fitted, the hand starter being used only in case of breakdowns of the other starter.

Control is by means of a wheel mounted on a rocking column, and a pedal for the rudder. The camber gear for operating the hinged trailing portion of the wings is in the form of a wheel mounted in the pilot's cockpit. The whole of the trailing edge, including the ailerons, is operated by this wheel, but the ailerons still retain their differential motion. An indicator is fitted which shows the pilot the exact angle that the camber flaps form with the chord line. The retractable land undercarriage which forms part of the amphibian gear is operated by a wheel in the pilot's cockpit.

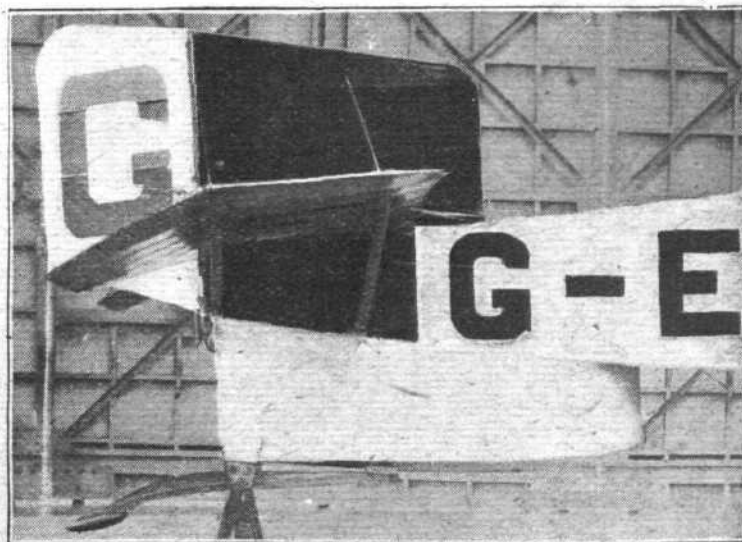
The main planes of the Fairey are of the usual Fairey type, having the whole trailing edge hinged so as to form a variable camber. This particular method of cambering the wings is the subject of a Fairey patent. The wings are designed to be folded both for housing and, if desired, when the machine is on the sea. Normally the long main floats extend sufficiently far aft to keep the tail off the water, but when the wings are folded the weight of the wings causes the tail to drop, and the tail float with which the machine is fitted then comes into



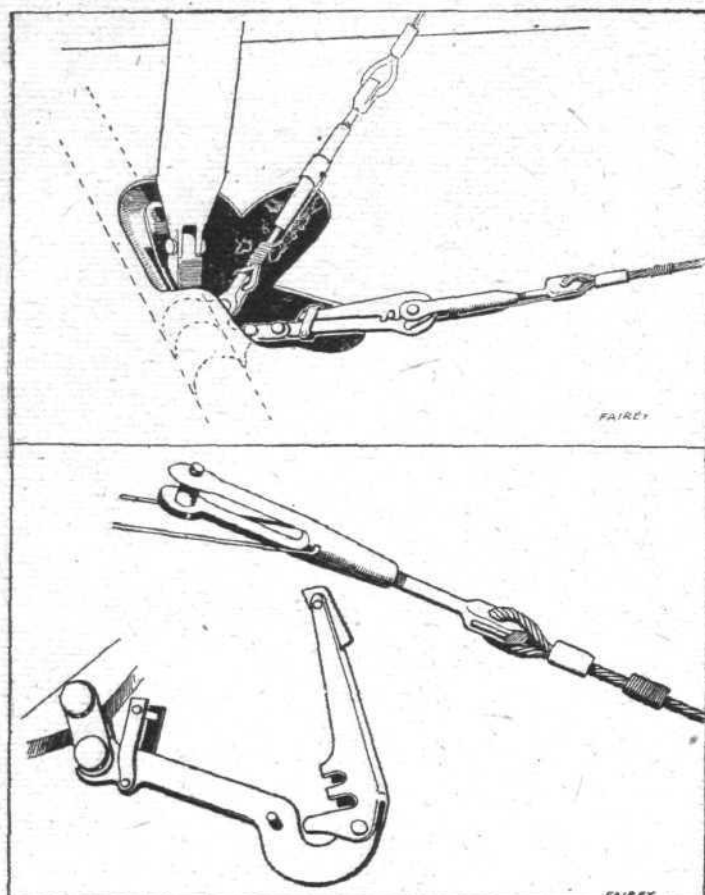
**ON THE FAIREY AMPHIBIAN :** Two single-acting water rudders are fitted on the outer corners of the float sterns. A rubber cord pulls the rudder inwards



The tail skid of the Fairey Amphibian is built up of wood laminations



**THE FAIREY III AMPHIBIAN :** View of tail, tail float and skid



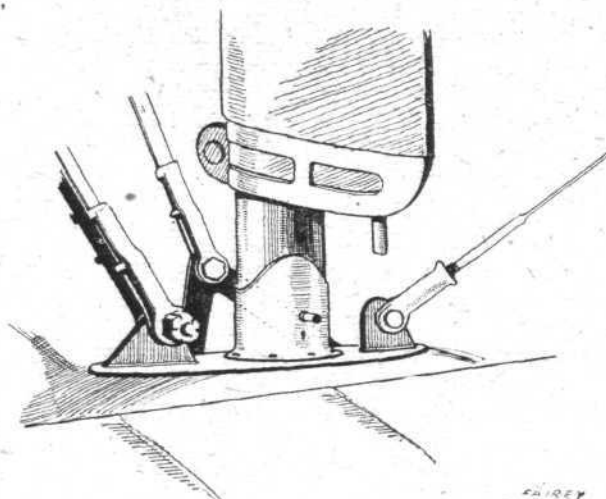
**SOME FAIREY QUICK-RELEASE DEVICES :** These are used on the external drag cables to facilitate casting off when folding the wings

action. As the wings are braced by external drag cables it becomes necessary to provide some means for quickly casting off these cables when the wings are to be folded, and the manner of doing this is indicated in the accompanying sketches, which show the release devices. The inter-plane struts are in the form of steel tubes enclosed in streamline fairings, and the manner of securing the struts to the spars, as well as the attachment of the lift and anti-lift wires, is shown in one of our sketches.

The two main floats of the Fairey are of the plain, rectangular section, single-stepped type, with the portion aft of the step extending a considerable distance aft so as to support the tail without the aid of the tail float. When, however, the wings are folded the tail float takes the load, as already mentioned. The main floats are sprung from the cross tubes of the undercarriage by rubber shock-absorbers. When on the sea, the machine has each float sprung both forward and aft. A third

shock-absorber is fitted for the land undercarriage, so that when the machine is running over the ground, each side is sprung at three points, providing a form of progressive springing which should make the machine very comfortable to handle ashore.

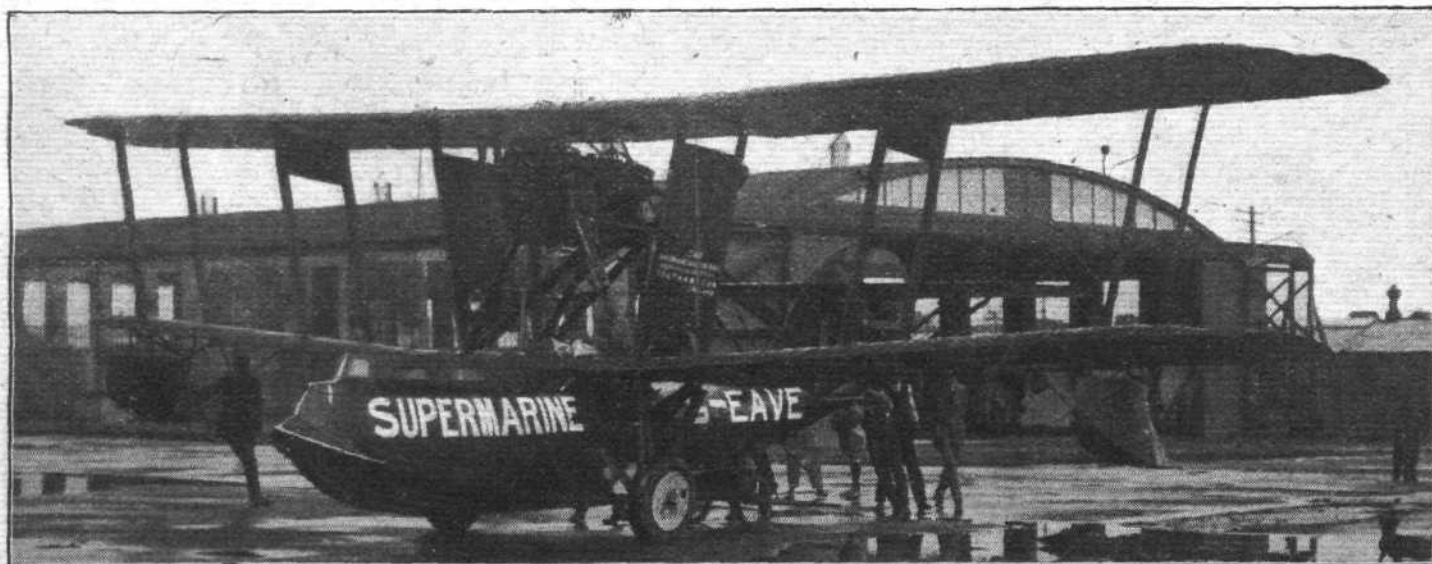
The amphibian gear consists of two wheels mounted on a structure of steel tubes. This structure hinges on the front float cross-tube, and its rear horizontal member has its ends resting in slots in the top of the floats. A locking arrangement is provided by means of which the rear tube is secured to a set of shock-absorbers inside the floats. The hooks of this arrangement are operated through cables from the pilot's cockpit, and its details will be clear from the accompanying sketches. The whole land undercarriage forms a rigid unit, its members travelling up and down with the wheels around the pivot formed by the front transverse float tube.



**A Fairey inter-plane strut fitting**

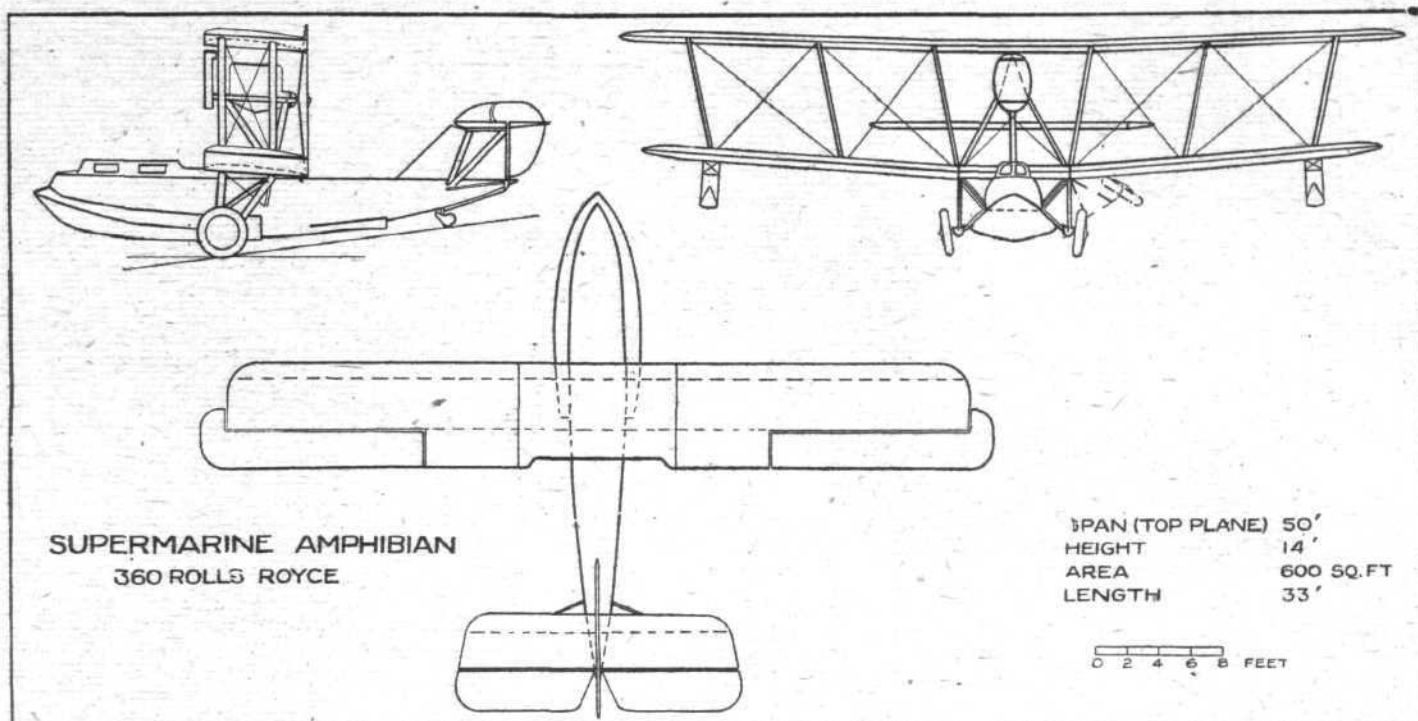
### **The Supermarine Amphibian, 360 h.p. Rolls-Royce "Eagle."**

Generally speaking, the Supermarine Amphibian entered for the Air Ministry Competition is similar to the well-known Supermarine "Channel type," although as regards actual dimensions the new machine is somewhat larger. Built for reliability in commercial work rather than for "stunt" performance in the actual competition, the machine is somewhat heavily loaded both per sq. ft. and per h.p., although her performance is by no means bad. One has always associated sturdy construction with the Supermarine boats, but the present one is, or at any rate gives the impression of being, extraordinarily strong, as an amphibian craft should be to be of any practical use. In fact, we understand that the machine is excessively strong, and that in future repetitions of the design a considerable amount of weight can be saved. It should be remembered that the machine was designed and built in a hurry, and many little refinements for which there



**THE AIR MINISTRY COMPETITION :** Wheeling out the Supermarine Amphibian flying-boat, 360 h.p. Rolls-Royce "Eagle" engine





was no time in the present machine will be incorporated in subsequent ones.

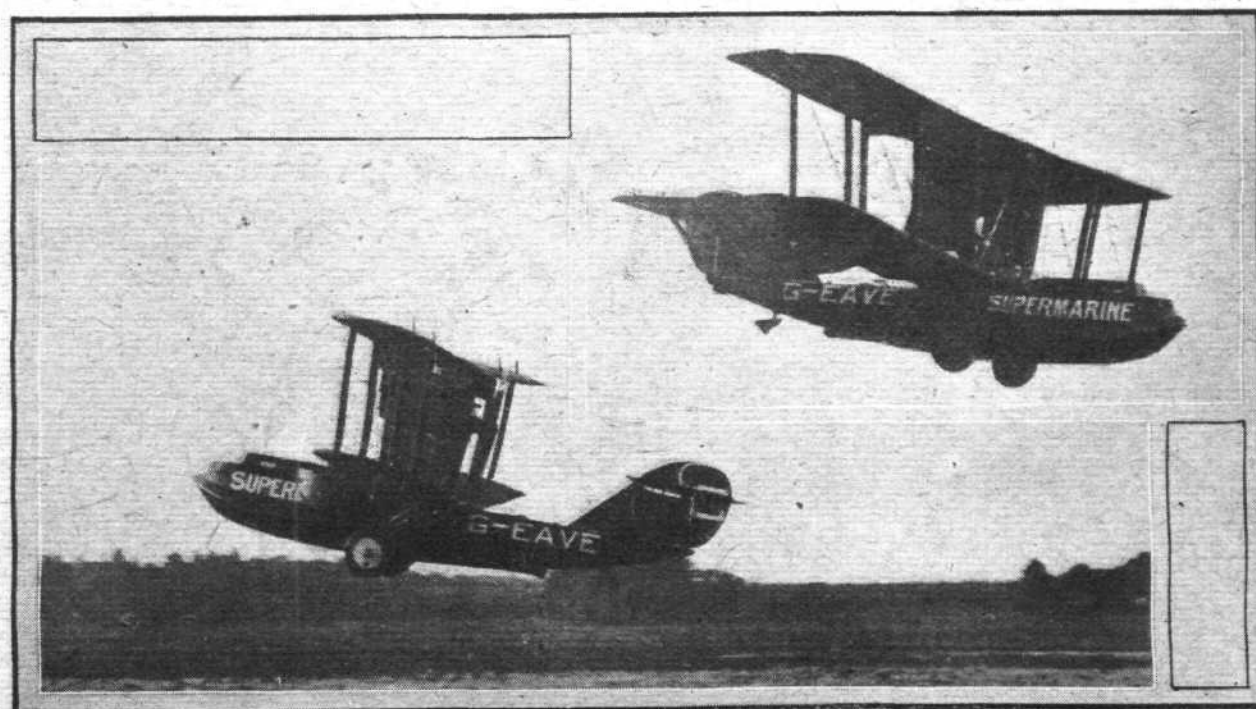
The boat hull is similar in shape to previous types, that is to say the main hull structure is a shell of circular section, built up of two skins of mahogany, the inner of which is laid diagonally, the outer longitudinally, covered with fabric. By way of strengthening the aft portion of the hull against the severe shocks caused by alighting on land, this part has fabric strips wound around it circumferentially, pulled as tight as possible by hand and then doped, so that the pressure exerted by the fabric strips on the shell is enormous and strengthens this portion of the hull very materially.

There are two steps, formed by a separate structure, of which the forward one is placed approximately under the centre of gravity and the aft one about half-way towards the stern. The planing surfaces appear to be considerably larger than those of the "Channel type," and the nose of the hull is more pointed, resembling that of the little "Sea King" exhibited at Olympia rather than the nose of the "Channel type." In the engine installation also one notices a departure from the previous model, in that the engine is a 360 h.p. Rolls-Royce "Eagle." It is mounted high in the gap to give clearance for the pusher airscrew, and supported on a very substantial structure of steel tubes. Unlike the "Channel

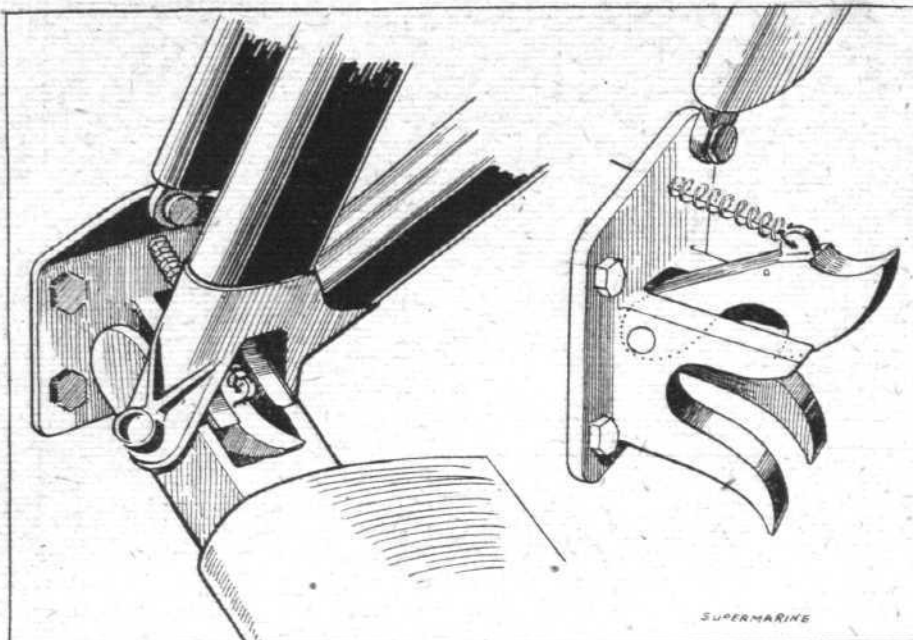
type," the wings are not made to fold, as this would have complicated the fitting of the land undercarriage. A novel feature on this machine is the cambering gear, which is similar in principle to, although differing in detail from, that of the Fairey float seaplane.

There is accommodation for two passengers in addition to the pilot, who occupies the aft cockpit just in front of the leading edge of the planes. The passengers are seated tandem fashion in front, and a hinged "conservatory" roof with windows is placed over their cockpit so as to protect them against wind and spray. The bolt which locks this hinged roof extends aft to the pilot's cockpit, but should it be necessary in an accident for the passengers to get out quickly, it will be an easy matter to knock a hole in the flimsily-built roof and thus get at the fastenings.

The pilot's "office" is very well equipped, not forgetting a very efficient bilge pump connected to the different watertight compartments into which the hull is divided. Recently an onlooker at Martlesham made the acquaintance of the aforesaid bilge pump by a stream of bilge water squirted on him. When he wishes to make remarks about the machine this gentleman now does so from a safe distance, or else from the starboard side. The cockpit of the Supermarine bears the obvious traces of having been designed by practical boat



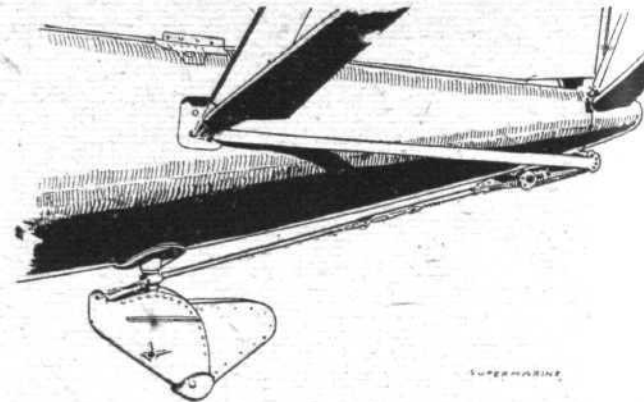
TESTING THE SUPERMARINE AMPHIBIAN AT MARTLESHAM : Starting off and, inset, coming in



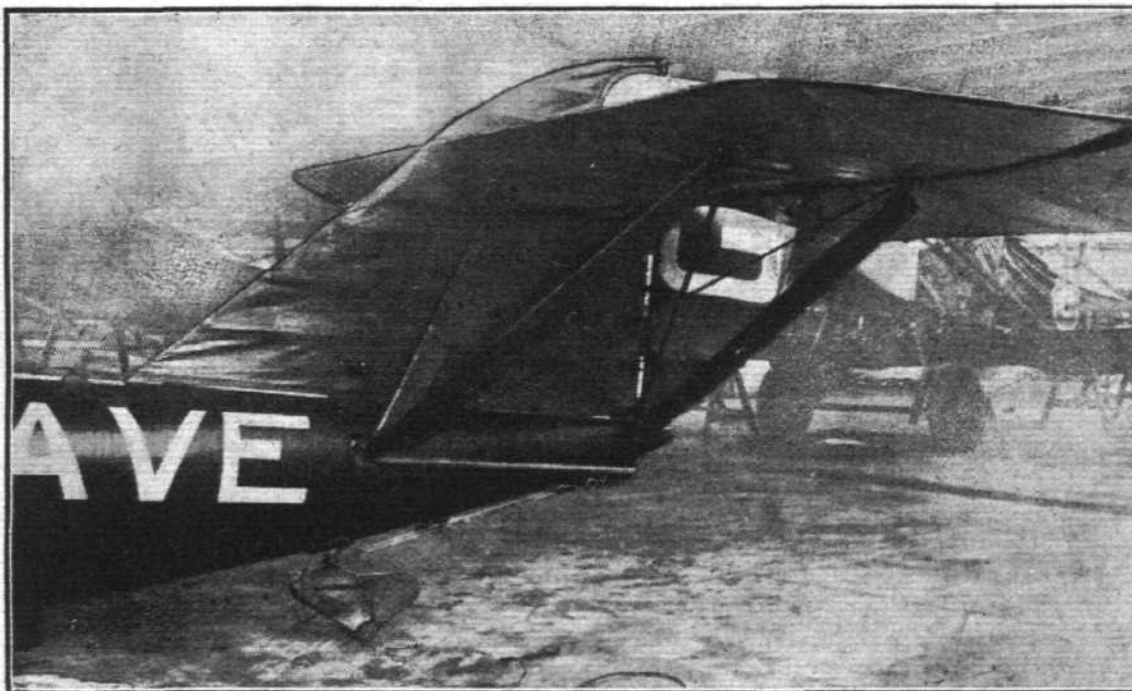
ON THE SUPERMARINE : Details of the locking arrangement of the land gear

very carefully designed a few rough alightings on land are almost sure to result in a strained and probably leaking hull.

The combined water rudder and tail skid is mounted some distance aft of the rear step. The rudder has a folding portion



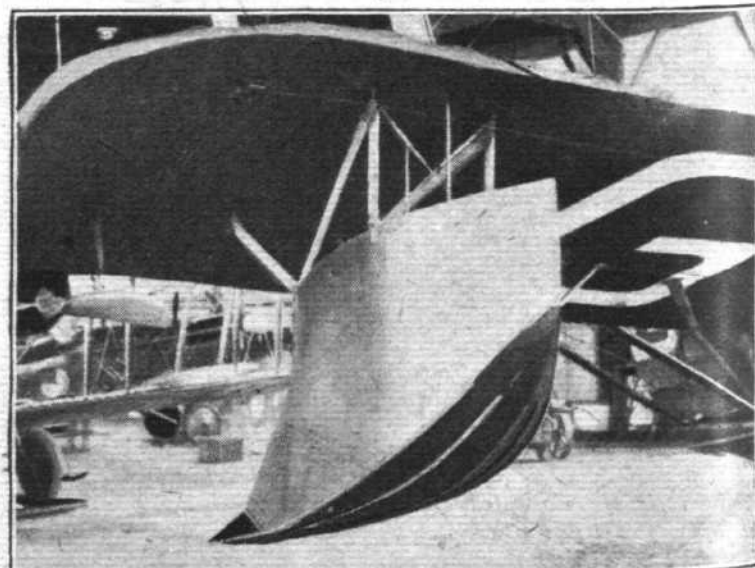
The water rudder of the Supermarine is sprung by cables and shock-absorbers to the stern



The Supermarine Amphibian : View of the tail planes

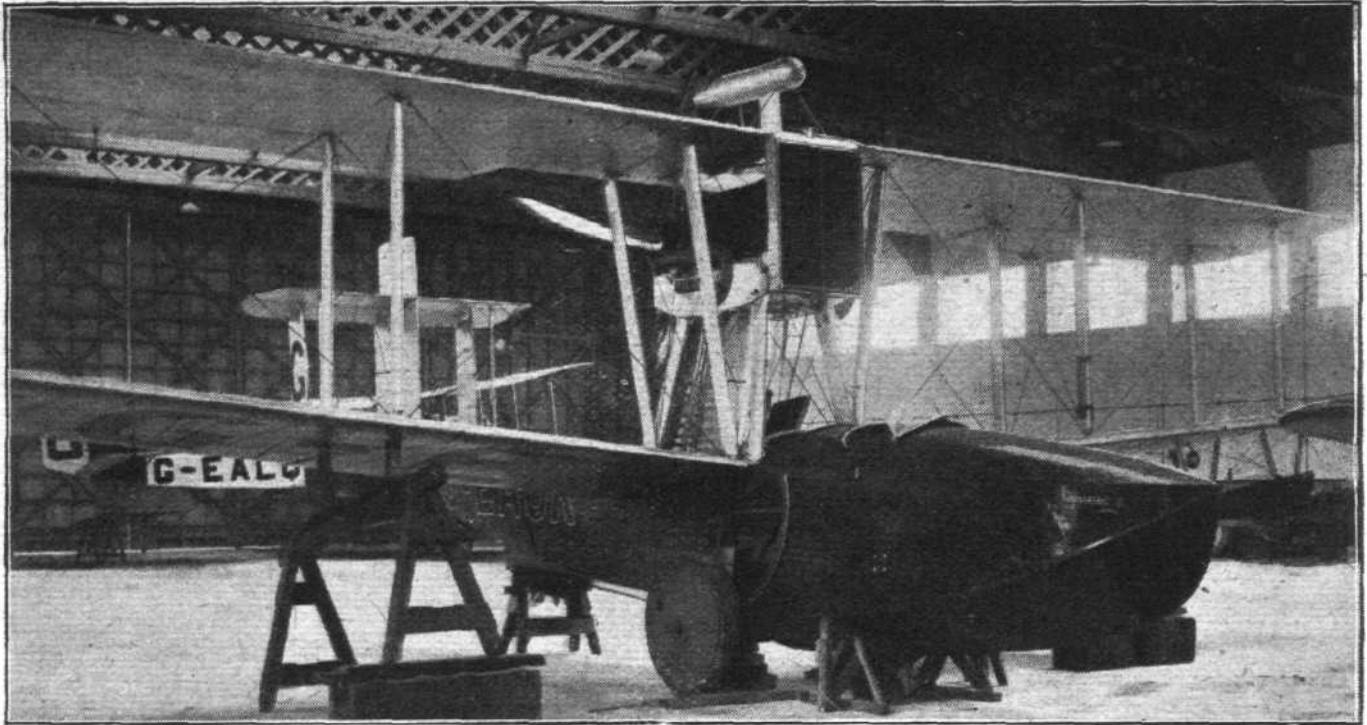
builders. This is indicated by a dozen and one little things too numerous to mention, but one instance may serve to illustrate the point : A short tiller is provided in front of the pilot, by means of which he can steer the boat while standing up in his cockpit. This allows him to obtain a good view of the sea all around, and is a very great assistance when navigating on the sea in crowded waters or when picking up moorings. Only a little thing, it is true, but showing the practical considerations which have been studied by the designers.

The land undercarriage consists of two wheels mounted on short, bent axles, and supported by a structure of steel tubes. For raising them out of the water, the wheels and their mounting structures are swung outwards and upwards by a series of cables and pulleys giving a great amount of purchase. In order to prevent the pilot from accidentally over-winding, stop cables incorporating short lengths of rubber cord are fitted. When the wheels are down, the inner end of the axle and the lower apex of the inner wheel Vee is locked by a hook as shown in one of our sketches. This locking is very positive, and at the same time the wheel-supporting structure is rigidly attached to the rest of the machine, the loads from all the heavy items such as engine, hull, etc., being transmitted direct to the land undercarriage Vees. Although somewhat heavy, the appearance of the land gear inspires confidence, and owing to the distribution of the load, one does not anticipate that the hull will be strained, even after repeated landings. This is one of the difficulties of the amphibian machine, that unless



THE SUPERMARINE AMPHIBIAN : One of the wing tip floats





THE VICKERS "VIKING," 450 H.P. NAPIER "LION" : Three-quarter front view

which can move into a slot in the main portion, and is provided at the heel with a steel shoe which takes the wear. This steel shoe is simply bolted on, and can be renewed in a few minutes should excessive wear render a renewal necessary. The method of springing is ingenious. From the front of the rudder two cables pass aft to the stern of the hull, to which they are anchored *via* rubber cords. In this manner the rudder itself is left free of protuberances which might interfere with the flow of the water around it, and at the same time the shocks are turned into an end load on the hull, which is well able to withstand them in this direction.

The tail plane is of the monoplane negatively cambered type, and the rudder is balanced by a forward projection working in a cut-out portion of the fixed vertical fin.

#### The Vickers "Viking." 450 h.p. Napier "Lion"

Apart from the fitting of a Napier "Lion" engine, the machine entered by Messrs Vickers, Ltd., is very similar to that exhibited at the recent Olympia Show. The boat hull is a Vee-bottomed, flat-sided structure of Consuta ply-wood attached to light internal stringers and formers. It is a question whether this form of hull is as strong, weight for weight, as one of circular or elliptical section. At any rate, modern tendency in flying-boat design appears to be towards the Linton Hope type, rather than the box form, but for a high-performance, lightly-loaded machine like the "Viking"

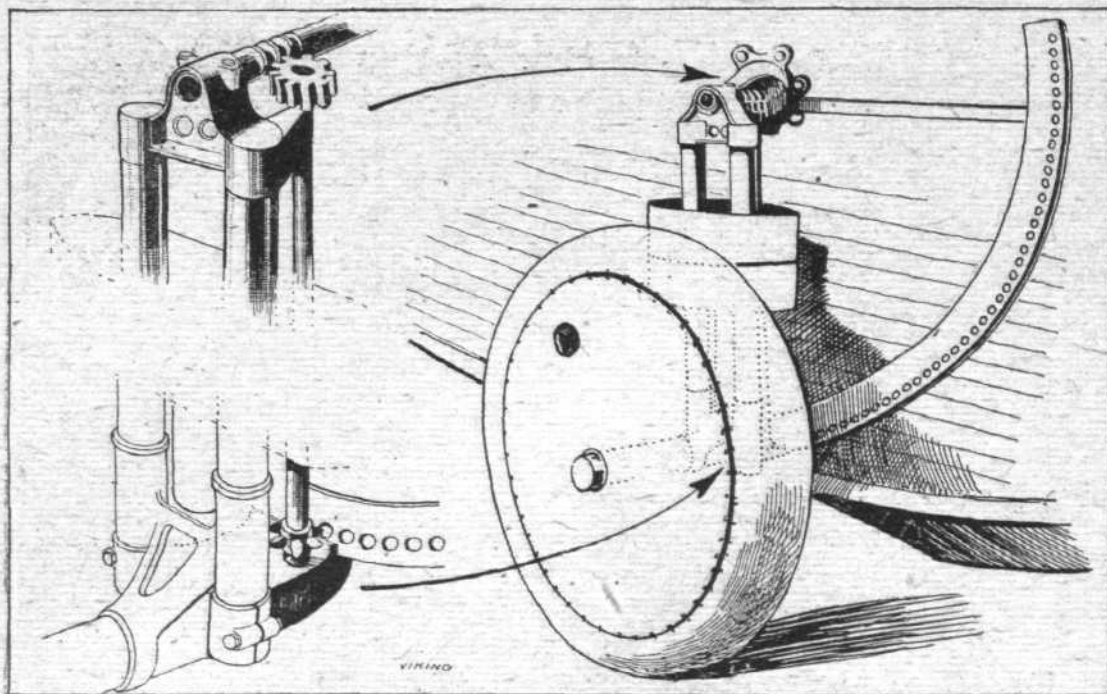
the flat-sided hull is probably quite strong enough. The machine is not, one presumes, designed for use in a really rough sea, and for the more sheltered waters the hull appears to be eminently suitable. The get-off of the Vickers "Viking" is nothing short of extraordinary, both on land and sea, and in a smooth sea at any rate she appears to be very dry. The hull lines are somewhat unusual, the downward sweep of keel and chines in front of the rear step being rather more pronounced than usual, and this appears to be accompanied by an absence of any tendency to "porpoise."

The passengers are accommodated in two cockpits in addition to that of the pilot. One of these is forward, while the second is placed aft of the main planes. The latter has a loose, hinged aluminium cover, which can be strapped on when the cockpit is not in use. This cover forms the subject of one of our sketches.

The combined tail skid and water rudder is placed immediately aft of the rear step, and one wonders whether it will not be found that in this position the water being deflected by the step will reduce the efficiency of the water rudder. It is possible, however, that at low speeds, when the water rudder is most needed, the water is not deflected sufficiently seriously to interfere with the action of the rudder, while at higher speeds the air rudder has already become operative. In principle the combined skid and rudder is similar to that of the Show machine, but the actual shape of the skid is slightly different.

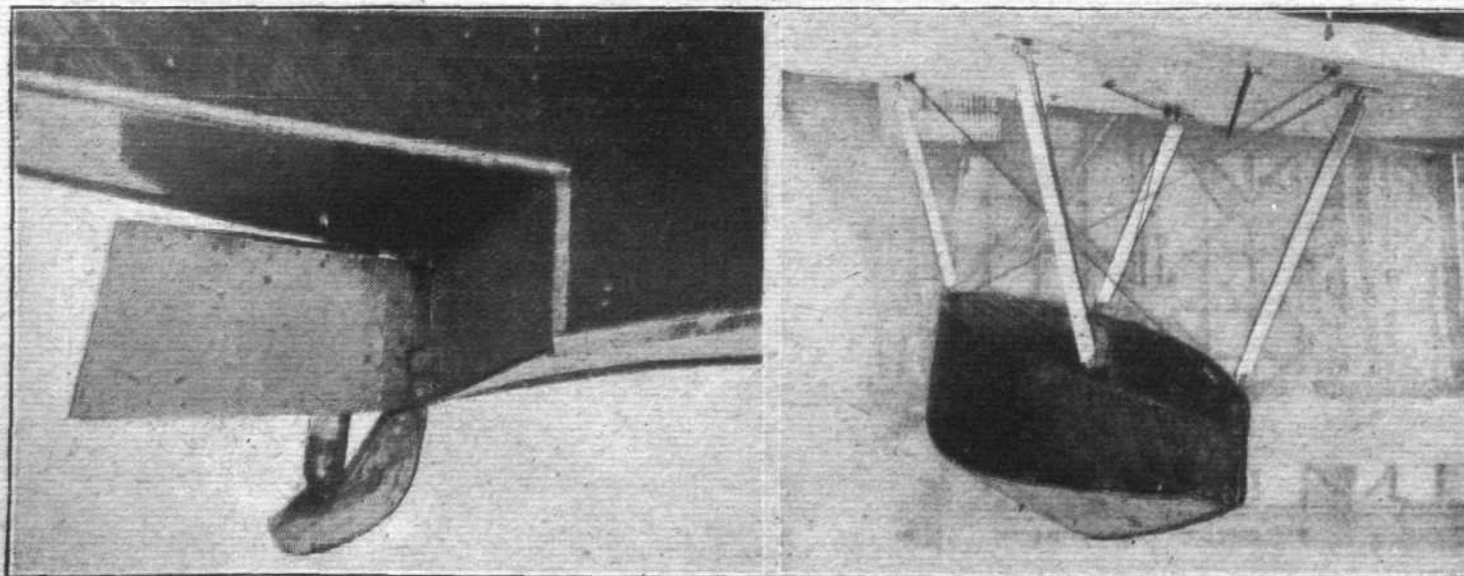


THE AIR MINISTRY COMPETITION : Three-quarter rear view of the Vickers "Viking" Amphibian, 450 h.p. Napier "Lion" engine



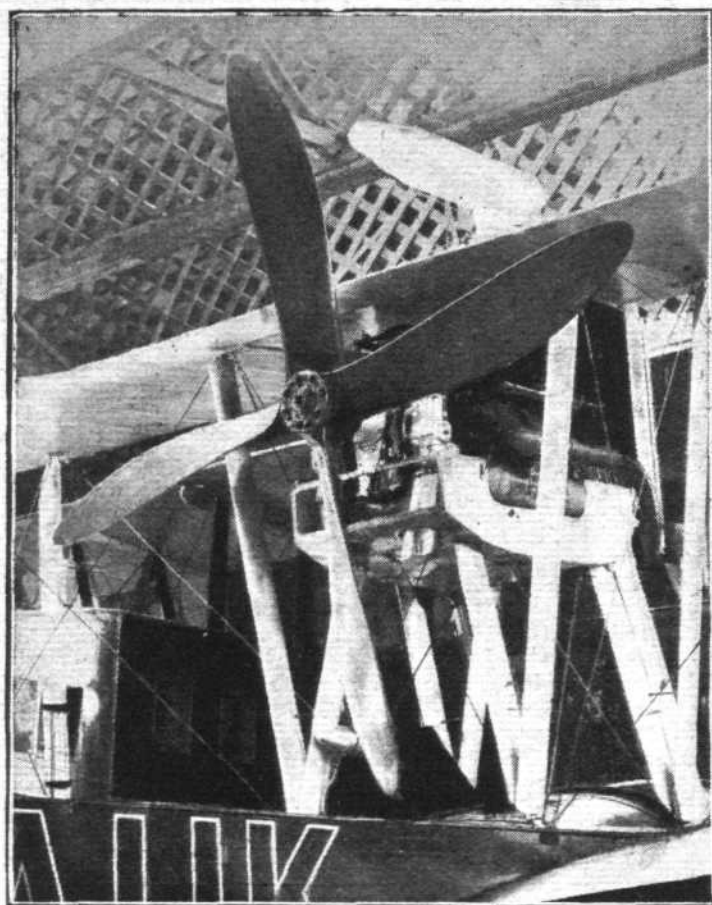
The Vickers  
"Viking": De-  
tails of the land  
gear

The Vickers  
"Viking" Am-  
phibian: View of  
the tail planes



THE VICKERS "VIKING" AMPHIBIAN: On the left, the water rudder, and on the right one of the wing tip floats

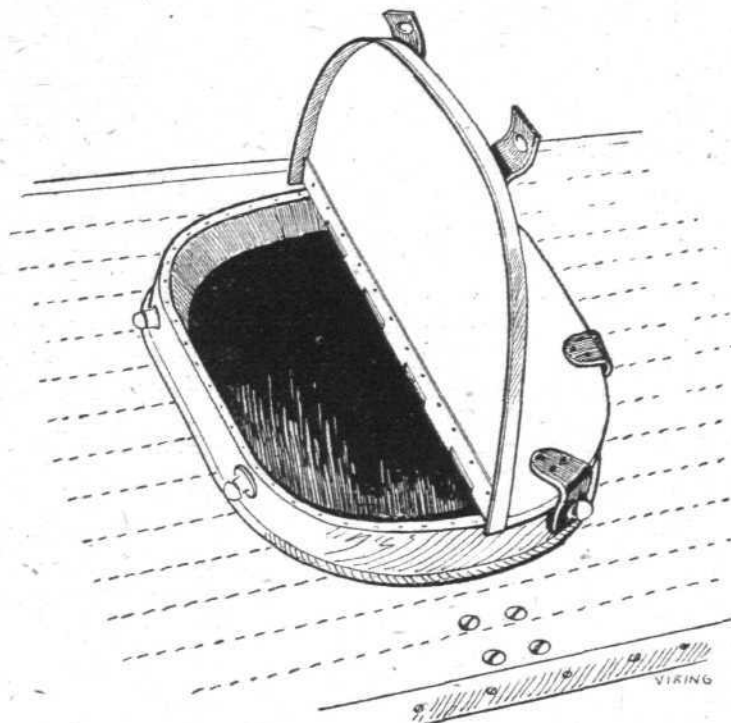




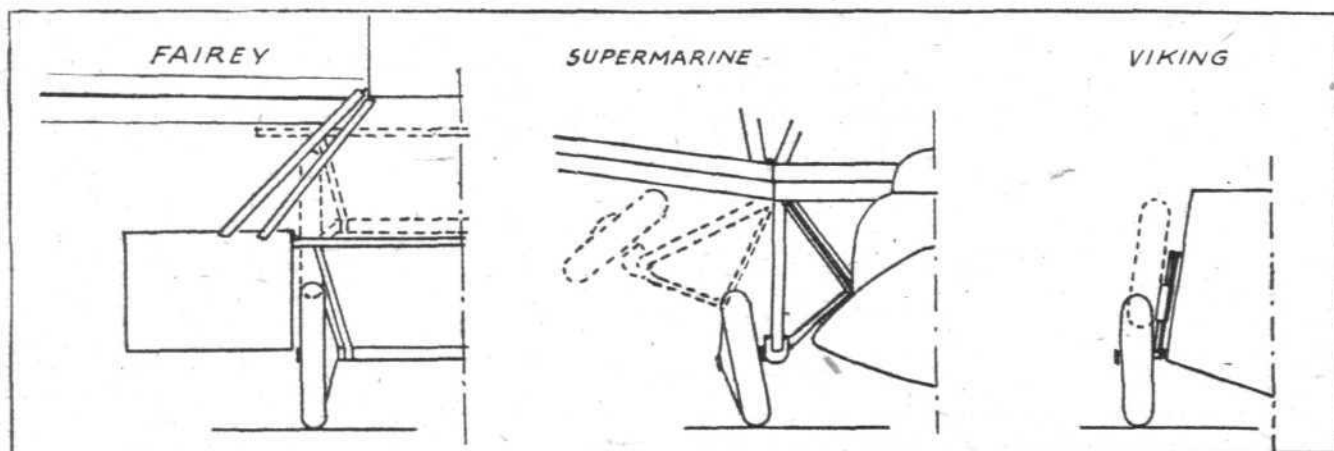
**THE VICKERS "VIKING" AMPHIBIAN:** View of the mounting of the 450 h.p. Napier "Lion" engine

engaging with the worm on the end of the transverse shaft passing through the boat hull. The wheels are thus lifted clear by being moved forward and upwards along the sides of body. The details of the gear are illustrated in the accompanying sketches.

A slight alteration is noticed in the biplane tail, which has had a small vertical fin added above the upper tail plane.



**THE VICKERS "VIKING":** The aft cockpit has a loose aluminium cover, secured by leather straps



**THREE WAYS OF DOING IT:** Diagrammatic sketches showing principles of raising the wheels in the Fairey, Supermarine and Vickers "Viking"

The land undercarriage is the same as that of the earlier model, consisting of two wheels mounted on telescopic tubes with Tee-pieces for the rubber shock absorbers. A star wheel at the lower end of the vertical rotating shaft engages with holes cut in the steel quadrant running up the side of the boat. The vertical shafts carry at their upper end a worm wheel

Otherwise the tail remains the same as that of the Olympia machine. The 450 h.p. Napier "Lion" engine is mounted between the planes, with a radiator in front of it. It drives a four-bladed pusher airscrew. The performance of the Vickers "Viking" is excellent fitted with this engine, both speed and climb being far above the normal for flying-boats.

#### Aerial Regulations in France

At last the French authorities have drawn up a series of regulations covering the inspection of aircraft, the issue of pilots certificates and the control of aerial traffic in France, and they are to be embodied in a decree to be published shortly. They are almost identical with the British regulations in accordance with the International Convention.

#### New Italian Dirigible on Trial

ON September 16 the new Italian dirigible "Roma" made a trial trip over Rome, but no details are available as to the results attained.

The airship is of the semi-rigid type, with a capacity of

34,000 cubic metres; it has three pairs of 400 h.p. motors, and can travel at from 68 to 74 miles an hour, but one pair of engines will keep up a speed of 56 m.p.h.

There is some talk of the airship being bought in the U.S., in which case she will make the journey by air. It was originally intended that she should go to South America.

#### The Copenhagen Service

THE first aeroplane, with mails and passengers for London, left Copenhagen at 10 a.m. on September 15, Prince Axel placing the first mail-bag on board the machine. Some mails from Norway and Sweden arrived from Malmoe by seaplane in time to catch the machine for London.

# AIRCRAFT FOR CANADA

It is officially announced that the Canadian Air Board has under consideration the purchase of a number of aeroplanes, seaplanes and flying-boats.

It is pointed out that as the War-type machines now in the possession of the Canadian Government become obsolete, it is the intention of the Air Board to replace them with the most modern commercial machines available. A certain amount of experimental work must be done to determine the type and kind of aircraft most suitable for the commercial work undertaken in the peculiar conditions prevailing in Canada.

The requirements which the Technical Officers of the Air Board consider should be embodied in accepted types of aircraft are set forth in the attached specifications, and a memorandum by the Superintendent of Flying Operations describes flying conditions and the operations contemplated.

It is the policy of the Air Board to purchase one each of several types of aircraft, and, after exhaustive tests in Canada, to standardise the types found to be most suitable, and to order in quantities.

Delivery of machines will be required on or before March 1, 1921. Payment will be made in accordance with standard export practice of cash against bill of lading.

## Flying Conditions in Canada and Class of Work upon which Aircraft will be Employed

Aircraft in Canada will be used very extensively in the opening up and development of comparatively unexplored land. Reference to standard maps will show that development in Canada has extended mainly east and west along the International Frontier, and that the development to the north from the boundary is comparatively recent. Thousands of miles of territory within comparatively short distance of the International Boundary Line are unexplored and practically unmapped. It is for the exploration and development of these regions that aircraft is particularly required by the Canadian Government. The work of aircraft will fall naturally into two branches—photographic exploration and forest protection.

For the former a machine will be required that will be capable of making long trips away from its base. It must be remembered that the country over which the machine will be required to fly is extremely rough and uncultivated, and that aerodromes are very few and far between. Hence, it will be necessary for machines of accepted types to have a sufficient supply of fuel to carry them from their base and back without being obliged to land and refuel. It is also essential that engines of the most reliable type are used, as a forced landing in such a country, devoid of railways and roads, would inevitably mean, if repairs could not be effected, the total loss of the machine.

The work of forest fire protection also entails long patrols from the base and away from aerodromes. The same conditions to a very large extent apply as in the case of photographic exploratory work.

A further consideration which must be borne in mind is that the only months free from snow and ice in the northern parts of Canada are April to November. It thus becomes essential that, if aircraft is to operate all the year round, provision must be made for aeroplanes, seaplanes and flying-boats to land on snow and ice. This will entail the provision of special under-carriage or rather a chassis arrangement. One of the greatest problems in Canada in this connection is the fact that for a time in the spring, and similarly in the fall, it will be difficult to find either open water for seaplanes to land on or yet ice of sufficient strength to bear the weight of the machine at rest.

This brief statement is made in order that it may be possible to appreciate some of the difficulties under which aircraft will operate in Canada, and that provision may be made for the various points in tendering as per the attached specifications.

## Single-Engine Flying-Boat

**Hull.**—The hull may be of either "box" or "Linton Hope" construction, of diagonal planking, consuta wood, or a combination of both. The hull should be designed to stand more wear and tear than was the case in the War-type flying-boat. The upper works of the hull must conform to the shape of the streamline of the F.5 or similar types. More space is required in a commercial-type flying-boat. It may, therefore, be found desirable to alter the construction of the upper works from chine to combing. The entire hull should be wood or metal construction, provided with bulkheads and drainage system, draining into a well, equipped with sea-cock (Kingston valve) or self-baling cockpit.

Provision must be made for stowage. The hull, therefore, must be as free as possible of cross-bracing struts or wires.

Provision must be made for landing on snow or ice. Since this type of machine will be used largely in inland waters, a fairly efficient hydroplane surface can be designed. The sharp V-bottom of the F. boats can give place to a more U-like section. It is imperative that the boat be designed to "take off" with a full load from fresh water at an altitude of 3,000 feet above sea-level. Hydroplaning distance permissible before flying speed attained, 600 yards with full load at 3,000 feet above sea-level.

**Lifting Surfaces.**—Ailerons and rudder should be balanced. Elevator optional. If convenient, arrangements for folding wings can be made; this is desirable.

**Wing Tip Floats.**—All wood construction, with bulkhead and drainage system of plugs.

**Petrol System.**—Petrol to be fed from main to gravity tank by rotary pump. Main tanks to be designed to conform to shape of hull, and to be placed as far as possible under flooring. Tanks to be designed so they can be filled rapidly from a central supply. Gravity tank to be placed in centre section of top plane.

**Petrol Capacity.**—Tank capacity should be provided for at least ten hours' flying at cruising speed.

**Engine.**—Rolls-Royce VIII "Eagle," modified type.

**Cooling System.**—Provision should be made for warming oil leads and water connections for winter flying.

**Radiator.**—The control of water temperature should be such as to provide against extremes of temperature ranging from 60° below zero to 100° in the shade. A large cooling system and radiators with large shutters must be provided.

**Controls.**—Dual control, wheel type.

**Canopy.**—Provision should be made to convert an "open boat" into a cabin type when necessary to protect pilot and crew in winter flying.

**Speed.**—Full-out speed not less than 100 m.p.h.

**Climb.**—Rate of climb is of comparatively little importance. It is essential, however, that the first 2,000 feet be climbed rapidly.

**Ceiling.**—With full load, 14,000 feet.

**Landing Speed.**—As low as is compatible with design.

**Camera Fitting.**—Provision must be made for the installation of an aerial camera, operating through an opening in the hull. The opening should be closed by means of a dead-light secured with screw-down thumb-screws or similar means.

## Single-Engine Aeroplane

**Fuselage.**—Fuselage should be much larger than was provided in War-type aeroplanes, and should provide accommodation for pilot and three passengers. Seats in the fuselage should be removable, and space usually occupied by passengers made available for cargo.

**Under-carriage.**—The under-carriage should be designed to provide more strength than was the case in War-type aeroplanes. It should be borne in mind that aerodromes in Canada are not so perfect as those in England, and rough landings over uneven ground must be provided against. Provision must be made for landing on snow or ice.

**Petrol System.**—Petrol system to be designed in such a way as to provide both pressure and gravity feeds. Main tank should be placed between the engine and the pilot.

**Petrol Capacity.**—Tank capacity should be provided for at least ten hours' flying at cruising speed.

**Engine.**—Rolls-Royce VIII "Eagle," modified type.

**Cooling System.**—Provision should be made for warming oil leads and water connections for winter flying.

**Radiator.**—The control of water temperature should be such as to provide against extremes of temperature ranging from 60° below zero to 100° in the shade. A large cooling system and radiators with large shutters must be provided.

**Controls.**—Dual control, stick type.

**Canopy.**—Provision should be made to convert an "open machine" into a cabin type when necessary to protect pilot and crew in winter flying.

**Factor of Safety.**—Not less than eight to one throughout.

**Loading.**—Provision should be made to carry as large a load of cargo as is compatible with other specifications.

**Speed.**—Not less than 120 m.p.h. full out.

**Climb.**—Rate of climb is of comparatively little importance. It is essential, however, that the first 2,000 feet be climbed rapidly.

**Ceiling.**—With full load, 14,000 feet.

**Landing Speed.**—As low as is compatible with design.



### Single-Engine Float-Type Seaplane

**Fuselage.**—Since this type of seaplane will be required to carry either passengers or cargo, it is essential that the fuselage be designed as free as possible from cross bracing wires. The fuselage may be much larger than was customary in War-type seaplanes. Seating accommodation for at least three passengers should be provided.

**Main Floats.**—These should be solidly constructed with bulkheads and equipped with drainage system, draining into a well. Floats should be designed in such a way that the installation of an aerial camera in the fuselage can be made possible: that is to say, the inner sides of the floats should not interfere with the angle of the camera lens. This may necessitate spreading the floats more than usual. Provision should be made for a camera with six-inch lens to be installed. Provision must be made for landing on snow or ice.

**Tail Floats.**—The provision of a tail float is optional, though better results seem to have been secured with seaplanes built along German lines, i.e., long main floats and no tail floats.

**Lifting Surfaces.**—Ailerons and rudders should be balanced. Elevator optional. If convenient, arrangements for folding wings can be made; this is desirable.

**Petrol System.**—Petrol should be fed from main tank to gravity tank by rotary pump. Main tank should be placed between the engine and the pilot. Gravity tank in main plain. Tanks to be designed so that they can be filled rapidly from a central supply. Both pressure and gravity feed system desirable.

**Petrol Capacity.**—Tank capacity should be provided for at least ten hours' flying at cruising speed.

**Engine.**—Rolls-Royce VIII "Eagle," modified type.

**Cooling System.**—Provision should be made for warming oil leads and water connections for winter flying.

**Controls.**—Dual control, wheel type.

**Radiator.**—The control of water temperature should be such as to provide against extremes of temperature ranging from 60° below zero to 100° in the shade. A large cooling system and radiators with large shutters must be provided.

**Canopy.**—Provision should be made to convert an "open seaplane" into a cabin type when necessary to protect pilot and crew in winter flying.

**Factor of Safety.**—Not less than 8 to 1 throughout.

**Loading.**—Provision should be made to carry as large a load of cargo as is compatible with other specifications.

**Speed.**—Full-out speed not less than 100 m.p.h.

**Climb.**—Rate of climb is of comparatively little importance. It is essential, however, that the first 2,000 feet be climbed rapidly.

**Ceiling.**—With full load, 14,000 feet.

**Landing Speed.**—As low as is compatible with design.

**Construction.**—It is of primary importance that machines for use in Canada be designed with a view to lasting qualities. The substitution of metal for wood, or any other means taken to prolong the "life" of the aircraft and hence decrease the depreciation will be favourably regarded by the Air Board.

### Twin-Engine Aeroplane.

**Fuselage.**—Fuselage should be much larger than was provided in War-type aeroplanes, and should provide accommodation for pilot and three passengers. Seats in the fuselage should be removable, and space usually occupied by passengers made available for cargo.

**Under-carriage.**—The under-carriage should be designed to provide more strength than was the case in War-type aeroplanes. It should be borne in mind that aerodromes in Canada are not so perfect as those in England, and rough landings over uneven ground must be provided against. Provision must be made for landing on snow or ice.

**Petrol System.**—Petrol system to be designed in such a way as to provide both pressure and gravity feeds. Main tank should be placed between the engine and pilot.

**Petrol Capacity.**—Tank capacity should be provided for at least ten hours' flying at cruising speed.

**Engine.**—Any standard type in production.

**Cooling System.**—Provision should be made for warming oil leads and water connections for winter flying.

**Radiator.**—The control of water temperature should be such as to provide against extremes of temperature ranging from 60° below zero to 100° in the shade. A large cooling system and radiator with large shutters must be provided.

**Controls.**—Dual control.

**Canopy.**—Provision should be made to convert an "open machine" into a cabin type when necessary to protect pilot and crew in winter flying.

**Factor of Safety.**—Not less than eight to one throughout.

**Loading.**—Provision should be made to carry as large a load of cargo as is compatible with other specifications.

**Speed.**—Not less than 100 m.p.h. full out.

**Climb.**—Rate of climb is of comparatively little importance. It is essential, however, that the first 2,000 feet be climbed rapidly.

**Ceiling.**—With full load 14,000 feet.

**Landing Speed.**—As low as is compatible with design.

**Flying Capabilities.**—Only those machines which are capable of flying in the air with full load with one engine completely cut out will be considered.

## NOTICES TO AIRMEN

### Aerodrome List Amendments

It is hereby notified: Additions and Amendments to

Notice to Airmen, No. 81 (Consolidated List of Aerodromes) of July 20, are as follows:—

LIST B.—(b) Stations Temporarily Retained for Service Purposes

The following should be deleted:—

Aerodrome.				Nearest Railway Station.	Nearest Town.		
Name.	Lat.	Long.	Height above sea-level.		Name.	Distance from Aerodrome in miles (by road).	True Bearing from Aerodrome.
Shoreham .. ..	50° 50' 20" N.	0° 17' 30" W.	10 ft.	Shoreham (L.B.&S.C.R.), 1 mile	Brighton	6½	E.
Thetford .. ..	52° 23' 30" N.	0° 47' 30" E.	100 ft.	Thetford (G.E.R.), 2 miles	Thetford	2	N.W.

LIST C.—Licensed Civil Aerodromes. (b) Civil Aerodromes Licensed as "Suitable for Avro 504 K and Similar Types of Aircraft only."

The following should be added:—

Brighouse, Thornhills Lane .. ..	53° 42' 30" N.	1° 45' 30" W.	400 ft.	Clifton Road (L.&Y.R.), 1 mile	Brighouse	1½	S.W.
Sheringham .. ..	52° 56' 0" N.	1° 13' 0" E.	80 ft.	Sheringham (M.&G.N.), ½ mile	Sheringham	½	N.N.W.

Notice to Airmen No. 97.

### R.A.F. Cadet College Professorship

DR. O. S. SINNATT, M.C., D.Sc., M.Sc., Lecturer in Mechanical Engineering, London University, King's College, since 1905, has been appointed to the Professorship of Aeronautical Science at the R.A.F. Cadet College, Cranwell.

Dr. Sinnatt was born in Liverpool in 1882, educated at

the Manchester College of Technology, and Owen's College, University of Manchester. He went to France with the 2nd London Regiment early in 1917, and was severely wounded at Poulcappelle. After his return from hospital, he was attached to the Air Ministry as a Technical Officer and served in the Instrument Division.

# FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

A Few Notes on the Geneva Conference of September 8, 9 and 10, 1920

CONTRIBUTED BY HAROLD E. PERRIN, SECRETARY OF THE ROYAL AERO CLUB

SEVERAL matters of general interest arose during the course of the Fédération Aéronautique Internationale Conference in Geneva on September 8, 9 and 10, 1920. For example, the difficulty which aviators have experienced in connection with any long-distance trip in getting maps which indicate even roughly the situation of landing places and aerodromes was felt so strongly that it was decided in advance of the projected action of the International Convention, which may be delayed indefinitely, to produce a preliminary series of maps in an international guide book. The British delegates were fortunate in being able to submit a "format" of the proposed "Guide to aerodromes in the British Isles" with examples completely worked out, which might form a basis for the series. This Guide Book was considered by the Fédération Aéronautique Internationale to be so well done that it was proposed to repeat it as far as possible for all countries. The book in question was prepared by the Air Ministry, Civil Aviation Branch, in co-operation with the Society of British Aircraft Constructors and the Royal Aero Club. Col. Mercanti (The President of the Italian Touring Commission) undertook to defray the expenses of the publication of the first issue, which he hoped would appear by next May. It is obvious that this preliminary guide will require bringing up to date, from year to year.

The case of a flyer who might find himself held up by reason of claims for third-party damages in a foreign country was considered, and it was proposed that if he were a Member of a Club belonging to the Fédération Aéronautique Internationale, the Club of the country in which he finds himself should take upon itself to free him from detention by paying the claims, if reasonable, reimbursing itself from the Club of the flyer subsequently. The whole scheme would, it is proposed, be covered by an insurance to be effected by each of the federated clubs. This was referred to a special Law Committee for consideration and report to the next Meeting.

A desire having been expressed that the various symbols used in discussions on the mathematics of stability in the various countries should be understandable universally, it was agreed that a standardised code of symbols should be adopted, and in this matter the British delegates were able to bring forward the system published in the "Glossary of Aeronautical Terms" for which the Air Ministry and the Royal Aeronautical Society are jointly responsible. This Glossary was provisionally adopted subject to the French translation of the Glossary being submitted to discussion by the various countries concerned.

It was suggested that the Mercator's System of Map Projection should be abandoned in favour of an alternative scheme, but this was opposed by the British delegates, in view of the existing international agreement, and the useful outcome of the discussion was that all Clubs should concentrate in supporting the employment of maps to the agreed standard scale as laid down in the International Air Convention (Annexe "F").

The résumé of Aeronautical Statistics during the War, which was undertaken by the F.A.I. in 1919, has progressed

considerably in the hands of the French editor to whom it was entrusted, and who had circularised all Clubs with a heavy series of questions. The British delegates, with the assistance of the Air Ministry, gave a valuable series of replies, which were handed in at the Conference, and it was reported that six other countries had also sent in useful information.

The British delegates reported that the British Air Ministry accepts the Royal Aero Club's Certificate for Class "A" brevet (Pilot's Certificate), and it was agreed that the brevet of the Internationale Convention should be adopted by the Fédération Aéronautique Internationale as to Section 1 for Aeroplanes; Section 2, Balloons; and Section 3, Airships; thereby standardising the tests for all countries, allied, neutral and enemy.

The British delegates put forward a proposal that the Fédération Aéronautique Internationale should also adopt a "Superior Brevet" for holders of the existing Fédération Aéronautique Internationale Certificate, the Superior Brevet to include various useful feats in aerobatics. The British proposal was, in principle, accepted, and the details were to be circulated to the Clubs for discussion at future meeting.

The draft scheme for the Aerial Derby Around the World put forward by the Aero Club of America was not considered suitable for discussion in the form submitted, and it was agreed that the French Sporting Commission should draft a proper series of rules for submission to all Clubs.

The unification of signals as set out in the International Convention was adopted, but the various Clubs were invited to send in any additional suggestions.

The unification of compulsory apparatus to be carried on aircraft was left for the International Convention to decide.

The following questions were referred to the Technical Commission for report:—

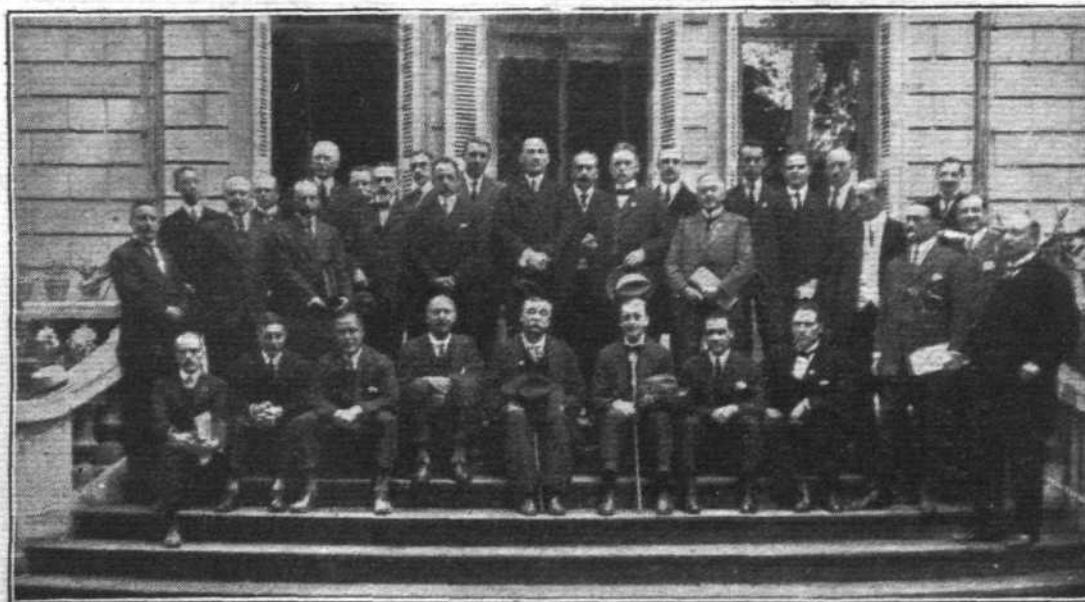
(a) To collect information as to results obtained on wireless telephone and telegraph communication from the Air.

(b) To report on the adoption of standardised parts of material on the lines laid down by the British Engineering Standards Association.

(c) To report on the value of writing the names of villages on the roofs of stations and on any scheme of international airways for the common adoption for long itineraries.

In the official report of 1919 proposed to the Conference for adoption there was allusion to a sensational sequence of 722 loopings effected in three hours. It was urged by the British delegates that no official provision existed in the F.A.I. for taking note of such aerobatic feats, and they should not properly be called records in the sense in which the word "Record" was used by the Fédération Aéronautique Internationale. It was agreed that while the statement had interest, the word "Record" should not be used.

The above few notes by no means represents the work of the Conference, but gives indication of some matters of more general interest which were touched upon. The British delegates representing the Royal Aero Club were: Col. M. O'Gorman, C.B., Col. F. K. McClean, Major E. H. Tindall Atkinson and Lieut.-Commander H. E. Perrin.



F.A.I. Conference: Representatives and Members of the Aero Club who gathered together at Geneva, September 8, 9 and 10





## ROYAL AERONAUTICAL SOCIETY' NOTICES

**Lectures.**—It has been found necessary in some cases to alter the dates of the lectures as given in the list issued last week, and a revised and more complete list is therefore appended. In some cases the date still remains subject to final confirmation.

1920	Lecturer	Subject
Oct. 7 ..	Sir Frederick Sykes, Hon. Fellow.	Civil Aviation.
Oct. 21	Squad.-Ldr. R. M. Hill, Ass. Fellow	A comparison of the Flying Qualities of Single and Twin-Engine Aeroplanes.
Nov. 4..	Cecil Baker... .. Wing-Cmdr. Flack..	Night Flying. The Human Machine in Relation to Flying.
Nov. 18	H. B. Irving, Ass. Fellow.	The Design of Aeroplane Control Surfaces, with Special Reference to Balancing.
Dec. 2..	A. Fage, Fellow ..	Aircrews. Airship Mooring. Airship Piloting.
Dec. 16	H. Ricardo ..	Possible Developments in Aircraft Engines.
	A. J. Rowledge, Member.	The Instalment of Aeroplane Engines.
1921		
Jan. 20	Lord Montagu of Beaulieu, Founder Member.	The Cost of Air-ton Miles compared with other forms of Transport.
Feb. 3..	G. Dobson .. .. Wing-Cmdr. H. W. S. Outram.	Meteorology and Aviation. Ground Engineering.
Feb. 17	F. Handley Page, Fellow.	The Handley Page Wing.
Mar. 3..	J. W. W. Dyer .. Major T. Orde Lees	Airship Fabrics. Parachutes.

Mar. 17 Capt. D. Nicolson, Flying Boat Construction. Ass. Fellow.

The following course of lectures to the students of the University of Sheffield has been arranged in response to a request from the Vice-Chancellor.

October 21. "Notes on the Inspection of Aircraft Steels," by Brig.-Gen. R. K. Bagnall Wild, C.M.G., C.B.E.

October 28. "Aircraft Drop-forgings," by Dr. L. Aitchison, A.I.C.

November 4. "Case-Hardened Steels and some Defects met with During Inspection," by Capt. W. A. Thain.

November 11. "Cold-worked Aircraft Structural Steels," by Dr. L. Aitchison, A.I.C.

November 18. "Materials for Aircraft from the Point of View of the Designer," by A. J. Rowledge.

November 25. "The Economical Use of Steel in Aircraft," by A. A. Remington.

Two popular lectures are also being arranged on November 4 and February 24, 1921, in the Central Library, Fulham, at the request of the Chief Librarian.

**Library.**—The following books have been received and added to the Library:—"Australian Meteorology," Griffith Taylor, "A Text-book of Aeronautical Engineering," Alexander Klemin, "L'aéronautique pendant la guerre mondiale," "In the Blue," Major S. H. Long, "Model Aeroplaning," V. E. Johnson.

**Early Members.**—Members will no doubt be interested to learn that in the course of examining various old papers in the records of the Society, the Secretary has come across a number of original applications for membership, from amongst them, the following aeronautical pioneers and prominent scientists:—Dr. Alexander Barton, Octave Chanut, S. F. Cody, Henry Coxwell, Sir William Crookes, A. E. Gaudron, Lawrence Hargrave, Thomas Moy, Hon. C. S. Rolls, Lord Rayleigh, Capt. Robert Falcon Scott, R.N., Percy Pilcher, Jose Weiss.

W. LOCKWOOD MARSH,

Secretary

## THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN SEPTEMBER 12 AND SEPTEMBER 18, INCLUSIVE

Route	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
			Mails	Goods				
Croydon-Paris ...	30	63	11	14	28	h. m. 2 34	Airco 16 G-EAPM (2h.) ...	A.4 (1), A.9 (4), A.16 (5), A.18 (2), B. (1), G. (2), N. (2), Sp. (1), W. (1).
Paris-Croydon ...	34	75	5	12	29	2 29	Airco 16 G-EAQS (1h. 54m.)	A.4 (1), A.9 (2), A.16 (5), A.18 (2), B. (2), G. (3), N. (3), Sp. (1), W. (1).
Cricklewood-Paris ...	10	62	—	5	10	4 19	H.P. G-EATK (3h. 14m.) ...	H.P. (8).
Paris-Cricklewood ...	12	63	1	4	10	3 46	H.P. G-EATH (3h. 10m.) ...	B. (1), H.P. (8).
Croydon-Amsterdam ...	6	—	—	6	6	2 55	Airco 9 G-EAPL (2h. 27m.)	A.9 (3), A.16 (2).
Amsterdam-Croydon ...	8	6	5	2	6	2 45	Airco 9 G-EAGY (2h. 26m.)	A.9 (4), A.16 (2).
Cricklewood-Amsterdam	7	8	2	2	?	—	Times of arrival not received.	A.4 (2), A.9 (2).
Amsterdam-Cricklewood	7	2	2	1	7	3 21	?	A.4 (1), A.9 (2).
Croydon-Brussels ...	—	—	—	—	—	—	—	—
Brussels-Croydon ...	—	—	—	—	—	—	—	—
Cricklewood-Brussels ...	7	12	6	4	6 (?)	2 36	Airco 4 O-BARI (1h. 58m.)	A.4 (2), A.9 (3), H.P. (1).
Brussels-Cricklewood ...	7	4	2	3	5	3 13	Airco 4 O-BARI (3h. 30m.)	A.4 (3), A.9 (2), H.P. (1).
Totals for week ...	128	295	34	53	107			

\* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

A.4 = Airco 4. A.9 = Airco 9 (etc.). B. = Breguet. G. = Goliath Farman. H.P. = Handley Page. N. = Nieuport. Sa. = Salmson. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Air Post of Banks; Air Transport and Travel; Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

### The Air Post of Banks Starts

It may be recalled that Air Post of Banks, Ltd., exhibited a Westland limousine at the last Olympia Show, and it was intimated that it was to be used on a service between London and Paris. Actual operations commenced on Monday of last week, and it is proposed to maintain a daily service. While the company makes a speciality of carrying valuable

securities for banks, passengers and goods will also be carried. Westland limousine machines are employed, and the pilots are under the direction of Mr. F. T. Courtney. The single passenger fare to Paris, with 30 lb. weight of luggage free, and inclusive of breakfast for early morning passengers, is £10 10s., and each single ticket entitles the holder to a return ticket for £8 8s.



OCTOBER 12, 13 and 14 are the dates now officially announced for the Air Conference to which reference has recently been made in these columns. As we surmised, the Conference will be held at the Guildhall in the City, and some very valuable facts and constructive criticisms should result from the series of papers of which, elsewhere in this issue, particulars are given. The conference is a great step forward and we hope it will mark the upward grade in the curve of prosperous revival already overdue in aeronautical progress.

SYMPATHY in the undeserved blow which industrial complications generally have forced upon the Sopwith Aviation and Engineering Co. is the one note from all sides with Mr. T. O. Sopwith personally, and those able co-operators in this great undertaking, Mr. R. O. Cary, the general manager, Mr. A. R. Fenn, the sales manager, and Mr. H. P. Musgrave, the secretary. Rumours are afloat as to revival or reconstruction, even if upon a less ambitious scale than the present huge organization embraces. These, however, for the moment must be accepted with caution, although all concerned and those who appreciate the importance of this undertaking are all agreed upon the imperative wisdom of keeping such a splendid goodwill in being. In the

hands of a capable liquidator many things are possible and hope must be for the best. In the meantime Messrs. Trollope have in hand for disposal, that glorious Surrey mansion, Horsley Towers, with its 2,000 acres, formerly the seat of the Earl of Lovelace, which Mr. Sopwith some few years back acquired.

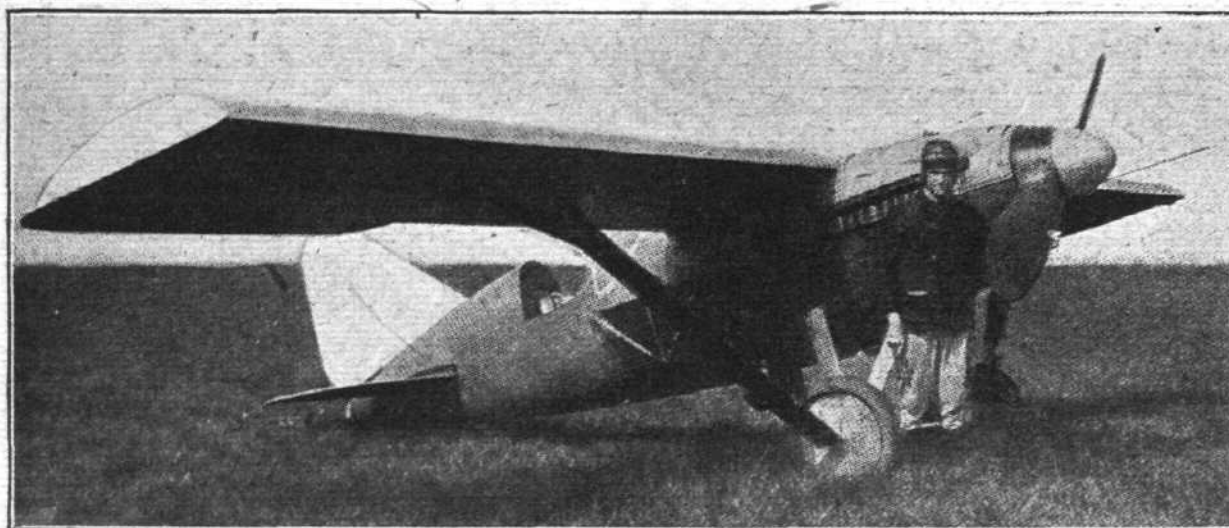
WRAPPED up in this collapse is naturally the Sopwith entry through the Aero Club on behalf of Great Britain for the Gordon Bennett Cup Race, due for competition next week. It had been hoped that the very fast Sopwith 'bus might still have toed the line through the taking over of the entry by some sportsman. And this very nearly materialised through a combination of sportsmen. Failure to maintain the entry by this means is due to a bit of ill-luck, begotten of the rate at which things move these days, when a live firm is concerned in the operations.

ALMOST immediately after the collapse became known, several Royal Aero Club enthusiasts got together, including Messrs. Frank K. McClean, Harry Knox, A. J. A. W. Barr, Alan R. Fenn, Harold E. Perrin, W. L. Jordan and



A Map of Europe, prepared by Messrs. Handley Page, Ltd., showing the air services actually in operation or contemplated





**The Curtiss Entry for the Gordon Bennett: The "Texas Wildcat" monoplane, for which is claimed a speed of 200 m.p.h.**

Handley Page, and decided to put up a sporting effort to save the situation. Approaching the liquidator, by way of a first step, for the hire of the machine, this custodian of the assets preferred to make it a sale right out. Difficulty number one was surmounted by agreeing to this at a reasonable figure. Then came the question of the engine. This was to be a Bristol Jupiter. Sir Stanley White was therefore approached and he at once entered into the spirit of the thing by tentatively looking with favour upon the suggestion of not only loaning the Jupiter which his company had in special preparation for the Sopwith machine, but even of joining the ring of sportsmen in regard to the expenses. But Sir Stanley had reckoned without taking into consideration the prompt methods of dealing with their work which prevailed in the Bristol factory. When the determination to close down had been made by the Sopwith Co., naturally the Bristol Co. were at once apprised of the fact. This meant that the Jupiter would no longer be called for, and with the promptness to act which characterises Sir Stanley White's company, the engine was taken down practically forthwith. It was not until Tuesday this week, that this was definitely known, and therefore too late then to enable the Sopwith machine to be put through for the race. Thus endeth the praiseworthy effort of all concerned in making an eleventh hour try to put up a third string to Britain's bow to bring back the Gordon Bennett Cup to these shores.

By German wireless it was announced from Berlin on September 17, that the delivery of aircraft to the Entente, in accordance with the Versailles peace treaty had been completed. Accepting this as correct, we now, having cleared the German decks of all their obsolete air junk, have given them a clean slate for creating more and still more advanced designs for both commerce and "der tag." And by all accounts there is considerable movement going on over there.

ACCORDING to a *Daily Express* correspondent the Air Ministry have decided to restore the airship station at East Fortune, Scotland, to its former importance, or else to improve

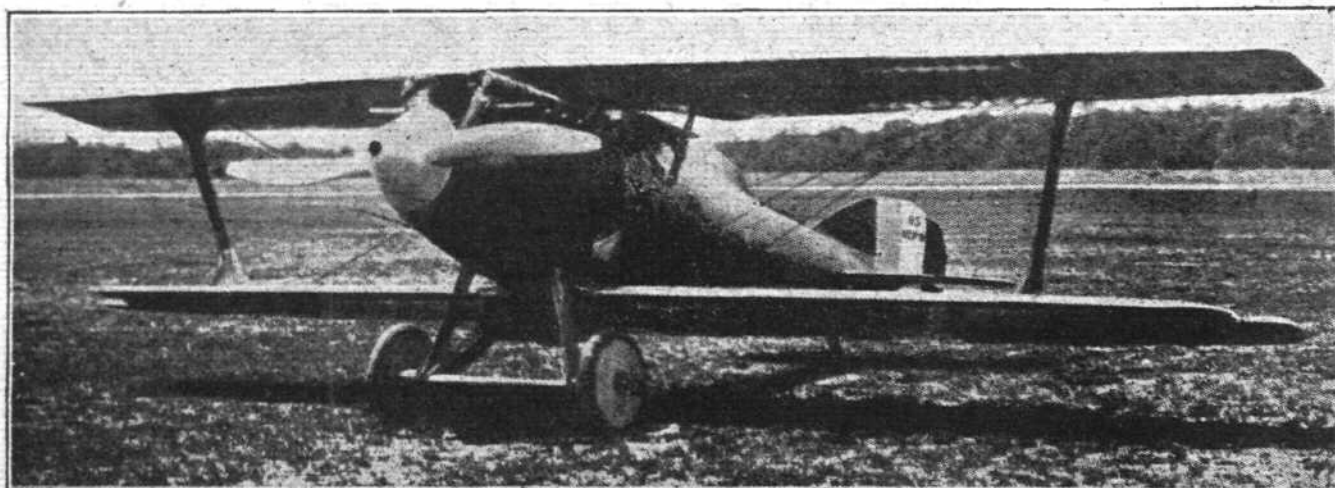
the station at Longside. The object of this change of policy is to develop the use of airships as fleet scouts. During the past few weeks the R33 has taken part in naval manoeuvres, and has emphasised the lessons learned in the War of the value of aircraft acting in conjunction with seacraft. The R33 has also been used for experiments in controlling the course of torpedoes. The Atlantic airship, the R34, is also to be used in the development of the Air Ministry's new policy. Deponent states she is to be employed in commercial and passenger services to the Continent. It is also suggested that the airships still in commission will be used for carrying mails in the event of a coal strike.

We should be glad to think this is all as stated, but we fear there is a flaw somewhere.

FROM New York a new "record" is being put up for Miss Laura Bromwell, ætat 18, who at the Long Island Aerodrome, it is stated, "assisted" at 87 loopings.

An opening with the Canadian Air Board, for a good man as Technical Director, offers itself. Preference, all other things being equal, we are glad to say will be given to candidates who have been on active service. For fuller details we would refer readers to our advertisement columns.

WE'RE getting on. From the *Daily Chronicle* New York correspondents comes the statement that standard sleeping berths, shower baths, and "all modern conveniences," are being installed in aeroplanes, under construction in Chicago, to accommodate 16 passengers and 1,500 lb. of mails. Half-hour stops will be made at control stations, where restaurants will be opened for the benefit of passengers. Mail contracts, aggregating £140,000, for three long-distance routes, have been awarded by the Post Office Department to the company which will operate these flying palaces. The first service is to be inaugurated in November between Pittsburg and Indianapolis. Later, regular trips will also be made between Chicago and New York, and New York and Atlanta.



**ANOTHER U.S. GORDON BENNETT ENTRY: The U.S. Army-Verville biplane, with 600 h.p. 12-cylinder Packard engine, which will be piloted by Maj. R. W. Schroeder**



# THE ROYAL AIR FORCE

London Gazette, September 7

## Flying Branch

Flying Officer H. L. Rough, D.F.C., is placed on the half-pay list (Scale A.), from Dec. 3, 1919, to March 31.

The following relinquish their R.A.F. commns. on appt. to the T.F.—Lieut. (actg. Capt.) C. P. Allen (Gazette March 28, 1919, to stand). Lieut. B. T. Anderson (Gazette March 28, 1919, to stand). Sec. Lieut. R. H. Baker (Gazette March 11, 1919, to stand). Lieut. C. H. Jeffs; July 7 (Gazette Nov. 7, 1919, to stand). Maj. A. Somervell, M.C., A.F.C. (Gazette June 3, 1919, to stand).

The following are transf'd. to the Unemployed List.—Sec. Lieut. F. W. Fox; March 14, 1919. Sec. Lieut. R. J. Mayer; April 17, 1919. Lieut. E. O. Humphries; July 7, 1919 (substituted for Gazette Aug. 15, 1919). Sec. Lieut. E. B. Thomson; Aug. 2, 1919. Sec. Lieut. C. C. A. Daniel; Sept. 20, 1919. Sec. Lieut. J. A. G. Williams; Sept. 26, 1919. Capt. C. Ryder; Oct. 8, 1919 (substituted for Gazette Oct. 24, 1919). Lieut. D. P. Farrant; Oct. 10, 1919 (substituted for Gazette March 5). Lieut. P. Loftus; July 15. Lieut. H. A. Anson, Lieut. L. L. Lindsay; Aug. 23.

Capt. A. Frauenfelder relinquishes his commn. on account of ill-health, contracted on active service, and is permitted to retain his rank; Sept. 25 (substituted for Gazette Aug. 31).

## Administrative Branch

Pilot Officer S. B. Potter to be Flying Officer; Jan. 12 (since demobilised). The following are transf'd. to Unemployed List.—Sec. Lieut. W. O. Jones; Feb. 10, 1919. Sec. Lieut. H. A. Thomas; March 29, 1919. Lieut. B. E. H. Whiteford, M.C.; June 12, 1919. Lieut. K. Draco; June 23, 1919. Sec. Lieut. A. Wells Toms; Nov. 15, 1919.

## Technical Branch

Pilot Officer H. H. Weller to be Flying Officer, Grade (A.); May 19, 1919 (since demobilised).

Pilot Officer L. F. Clarke to be Flying Officer without pay and allowances of that rank; Oct. 1, 1919 (since demobilised).

Sec. Lieut. A. M. Godfrey relinquishes his R.A.F. commn. on appt. to T.F. (Gazette April 1, 1919, to stand).

Lieut. C. B. Pensotti is transf'd. to unemployed list; Dec. 24, 1919 (notification Gazette of Jan. 16).

The notification in Gazette of July 20 concerning Capt. A. Burgess is cancelled (Gazette Feb. 3 to stand).

## Medical Branch

Flying Officer G. H. H. Maxwell to be Flight-Lieut.; Aug. 23. The following are transf'd. to Unemployed List.—Capt. R. D. Jones; April 7. Capt. B. H. L. Le Clezio; June 25.

## Memoranda

Wing-Com. M. G. Christie, C.M.G., D.S.O., M.C., is restored to the active list; Sept. 10.  
(Then follow the names of 43 Cadets who are granted hon. commns. as Sec. Lieuts.)

London Gazette, September 11

## Flying Branch

Sec. Lieut. C. E. Tudball (Suff. R.), relinquishes his temp. R.A.F. commn. on return to Army duty; May 4, 1918.

The following relinquish their R.A.F. Commissions on appointment to T.F.—Maj. R. T. Leather, A.F.C. (Gazette, July 22, 1919 to stand). Sec. Lieut. (Hon. Lieut.) C. J. Minister (Gazette, Jan. 6, to stand).

The following are transferred to the Unemployed List.—Sec. Lieut. J. Wallace; Feb. 8, 1919. Sec. Lieut. A. E. Newall; Feb. 12, 1919. Sec. Lieut. C. W. Jones; Feb. 19, 1919. Sec. Lieut. H. H. Howells; Aug. 7, 1919. Sec. Lieut. W. H. Tyler; Sept. 14, 1919. Sec. Lieut. L. B. Wiley; Oct. 10, 1919. Lieut. H. H. Hand, M.M.; April 26. Lieut. A. G. Thistle; May 14 (substituted for Gazette, May 25). Lieut. T. W. Brockley, Sec. Lieut. A. H. Hollis; Sept. 9.

## Administrative Branch

Lieut. W. E. Fox relinquishes his R.A.F. commn.; Sept. 2 (Gazette, Nov. 4, 1919, to stand).

The following are transferred to the Unemployed List.—Sec. Lieut. F. R. Stewart; Aug. 6, 1919. Lieut. A. P. Livingstone; Aug. 5.

## Technical Branch

The following are transferred to the Unemployed List.—Lieut. J. L. Dearing; March 5, 1919. Capt. J. D. Coles; Aug. 1, 1919 (substituted for Gazette, Jan. 13). Sec. Lieut. A. J. Collins; Aug. 19, 1919. Lieut. (Act. Capt.) T. E. Pennington; June 17 (substituted for Gazette, July 20). Capt. L. E. Sawyer; Aug. 4. Lieut. H. W. Sidley; Aug. 19. Lieut. H. Allsebrook; Aug. 28.

Lieut. A. W. Ellis relinquishes his commn. on account of ill-health contracted on active service, and is permitted to retain his rank; Sept. 3.

## Memoranda

Flight Lieut. R. S. Sugden, A.F.C., is placed on the half-pay list (Scale B); Aug. 13.

Sec. Lieut. C. Couldridge relinquishes his commn., with permission to retain his rank; Oct. 8, 1919.

Hon. Sec. Lieut. A. H. Bayes relinquishes his hon. commn.; Aug. 24, 1919.

## Air Ministry Staff

A WHITE PAPER just issued shows that during the month of July the headquarters staff of the Air Ministry was reduced by 85. The total on August 1 was 2,590, of whom 767 were permanent staff and 1,823 temporary. These figures do not include units and command officers, etc., the staff of which numbered 2,900 on April 1, 1920.

## Memorial to Aviator V.C.

On September 17 Air-Marshal Sir Hugh Trenchard unveiled a War memorial cross at Lamport, near Northampton. Among the names on the memorial is that of Lieut. W. B. R. Rhodes-Moorhouse, V.C., the first flying officer to receive the Victoria Cross. It was awarded to him "for most conspicuous bravery on April 26, 1915, in flying to Courtrai, and dropping bombs on the railway line. He was mortally wounded, but flew 35 miles back to his base and made his report. He died later in the day in hospital.

## Ex-Airmen in the Regulars

By a new Army Council instruction ex-airmen who re-enlist into the Regular Army will be allowed to count their former service in the Royal Air Force as "service" and as "qualifying service" for pensions under Articles 1135 (c) and 1136 (c), respectively, of the pay warrant. In the event of there being an interval of five years or more between the date of discharge from the Royal Air Force and re-enlistment into the Regular Army, the former service in the Royal Air Force will not count as "service" or "qualifying service" for pension under Army Order 325 of 1919, but will so reckon towards pension under the pay warrant.

## Air Work in Mesopotamia

A WAR OFFICE communiqué on September 15 stated:—  
"Baghdad-Hit Area.—A hostile encampment of the Zoba tribe was successfully bombed on September 12 by our aeroplanes.

"Upper Tigris.—Insurgent gatherings near Samarra have been effectively dispersed by our aeroplanes."

The communiqué of September 16 stated:—

"On September 7 the Civil Commissioner, Baghdad, visited Suleimanie by aeroplane, and reports that the district is at present the quietest and best administered in Mesopotamia, the people showing real co-operation in all branches of Government work."

The communiqué of September 17 stated:—

"Samawah was successfully bombed by an air formation on September 14. Minor attacks.

"Baghdad-Hit Area.—The camp of Hari, a Sheikh of the Zoba tribe, near Baghdad, was successfully bombed by aeroplanes on September 14.

"Upper Tigris Area.—During an aerial reconnaissance from Mosul, small parties of mounted Kurds were bombed and dispersed."

The communiqué of September 18 stated:—

"Upper Tigris.—Aerial raids have been carried out on Sharmin, N. of Akra, and Kalata, N.E., on border."

## The London-Amsterdam Air Mail Service

THE following alterations are announced in connection with the Handley Page service between England and Holland:

London-Amsterdam.—From September 23, 1920, machines will leave Cricklewood Aerodrome (London) at 2.30 p.m. (instead of 4 p.m.). The latest times of posting in London and the provinces will be the same as for the Brussels air mail.

Amsterdam-London.—From September 16, 1920, machines will leave Amsterdam for London at 8.50 a.m., calling at Rotterdam at 9.10 a.m., for passengers, mails and freight. From September 27, 1920, machines will leave Amsterdam for London at 7.50 a.m., calling at Rotterdam at 8.10 a.m., for passengers, mails and freight. Dutch time is given in each case from Amsterdam.

## 1000th Air Express

THE 1,000th aeroplane to be cleared outwards by Customs for foreign destinations this year left Croydon at 10.31 on September 17, for the Continent.

## A Paris-Brussels Record

On September 18 one of the machines regularly employed on the Paris-Brussels route made the journey in record time. Leaving Paris at 8.20 a.m., it landed at the Evere aerodrome, Brussels, at 9.25 a.m., having taken 1 hr. 5 mins. for the 145 miles.

## A Dutch Commission Coming

WITH the object of investigating our wireless-telephonic, meteorological and other installations in connection with commercial aviation, a commission nominated by the Dutch Minister of Public Works is coming to England. It is hoped that as a result of the visit the Commission will be able to promote co-operation between the British and Dutch organisations interested in existing and prospective air services between England and Holland.



### Franco-Turkish Air Mail

AN Imperial Trade has been published ratifying the convention concluded between the Franco-Roumanian company and the Ottoman Government for the creation in June, 1921, of an aerial postal service between Paris and Constantinople.

### A Secret Aeroplane at Memel

AT Memel a French court-martial has passed a sentence of two months' imprisonment and a fine of £20 on Herr von Schlenther, a landed proprietor and member of the Privy Council, on whose estate an aeroplane was discovered.

### Paris-Strasbourg, etc., Service

A START was made on Monday with an aerial service between Paris and Strasbourg. At present the service from Paris will only be on Mondays, Thursdays and Saturdays, but if sufficient traffic is offered the service will later be made a daily one. Next week a service will be started between Strasbourg and Prague, and it is hoped to continue it to Warsaw at the middle of next month.

### A Memorial to Gilbert

M. FLANDIN, the French Under-Secretary for Aeronautics, on September 19 unveiled a monument to M. Gilbert at Vichy, his native town. It may be recalled that M. Eugene Gilbert before the War was chiefly known for his fine flight from Paris to Madrid in 1913. His chief War exploit was the bombing of the Zeppelin works at Friedrichshafen in June, 1915. Unfortunately, at the conclusion of the bombing his engine failed, and he was forced to land in Swiss territory, where he was interned. In August, 1915, he escaped to France, but was sent back as the letter recalling his parole was not received by the Swiss authorities before he escaped. He made another unsuccessful attempt to escape in the following February, but was successful in May. He was killed at Villacoublay in May, 1918, while testing a new machine.

### Honouring Australian Flyers

THE Australians are always ready to recognise plucky performances, and, needless to say, there was an enthusiastic demonstration at the Town Hall in Melbourne on September 14, when a public testimonial and cheques for £550 each were handed to Lieutenants Parer and McIntosh in recognition of their successful flight from England to Australia.

### Flying in the Congo.

THE KING ALBERT AERIAL LINE in the Belgian Congo has now drawn up a scale of charges. Correspondence will be surcharged 3 frs. per 20 grammes or fraction of 20 grammes. Passenger fares on mail machines will be at the rate of 12½ francs per kilometre, and luggage will have to pay 30 francs per kilometre per stage.

### Japan and the League

At the Assembly of the League of Nations at Geneva in November, Japan will be represented by Viscount Ishii, Ambassador to France, Baron Hayashi, Ambassador to Great Britain, Baron Megata, as well as a military, a naval, and an air officer.

### The Air-Way in China

M. PAUL PAINLEVÉ, who has been acting as Advisory Director-General to the Chinese Government on Railways, and who is now on his way to France, on September 16 left Hong-Kong, by seaplane, for Haiphong (Tonkin).

### To Fly Across Canada

COLONEL R. LECKIE, with Major Basil Hobbs, will attempt a flight across Canada (Halifax to Vancouver, 2,850 miles) toward the end of this month.

### Aircraft Carriers for U.S. Fleets

It has been decided that the collier *Jupiter*, which is being transformed into an aeroplane carrier for the U.S. Navy, shall be re-named the *Langley*. It is anticipated that she will be ready for service in January, when she will be assigned to the Atlantic Fleet. It is also hoped that the U.S. Pacific Fleet will have an aeroplane carrier next spring in the *Wright*, which is being converted from a type "B" shipping-board ship. It is probable that some of the large bombing and torpedo planes which are being experimented with at New York Town, Va., will next year be posted to the *Langley* for tactical employment.

### New Use for Old Battleships

THE U.S. Naval authorities have decided to utilise the old battleship *Indiana* for aircraft target practice. In Lower Chesapeake Bay, the vessel is to be subjected to showers of bombs from a squadron of six naval sea-planes flying at heights ranging from 4,000 to 8,000 ft. At first, non-explosive bombs will be used, but the practice will finish up with bombs carrying a minimum of 1,000 lb. of T.N.T.

### Air Mails in the States

CONTRACTS for carrying mails in America totalling £197,100 are reported to have been awarded by the U.S. Government to the Lawson Aircraft Co., which is establishing aerial routes from Pittsburg to St. Louis, New York to Chicago, and New York to Atlanta (Georgia).

### Air Mails in Mexico

It is stated that an aerial mail service between Mexico City and Tampico is to be established by the Mexican Government.

### A Relay Race in Argentina

THE relay race is steadily gaining in favour as an item in the programme of aviation meetings.

At the Argentina Aeronautical Society's festival at Buenos Aires recently, an event of this nature was included, and it was won by a team composed of an Avro, a Curtiss and a Caudron.

### Unveiling the Chavez Memorial

THE ceremony of unveiling the Chavez Memorial at Brigue on September 12 took on quite an international aspect owing to the presence of the delegates, headed by Prince Roland Bonaparte, who had been taking part in the F.A.I. meeting at Geneva. From our photograph it will be seen that the monument is a very fine conception of the sculptor Colin, and it has been erected on the place St. Sébastien. Those who took part in the unveiling ceremony were each presented with a bronze medallion, bearing on one side a portrait of Geo. Chavez, and on the other a design symbolising the flight across the Alps, together with the inscription: Brigue-Simplon-Domodossola, September 23, 1910. Among those present were a brother of Chavez, the Peruvian Ministers in Paris and Brussels, and a representative of the French Government, while flying overhead was an escadrille from the Dubendorf Aerodrome.



The Chavez Monument unveiled by Prince Roland Bonaparte at Brigue on September 12. In addition to the F.A.I. delegates from all parts, who came up from Geneva, special missions attended from France, Switzerland and Italy. Colonel Mervyn O'Gorman spoke on behalf of Great Britain.

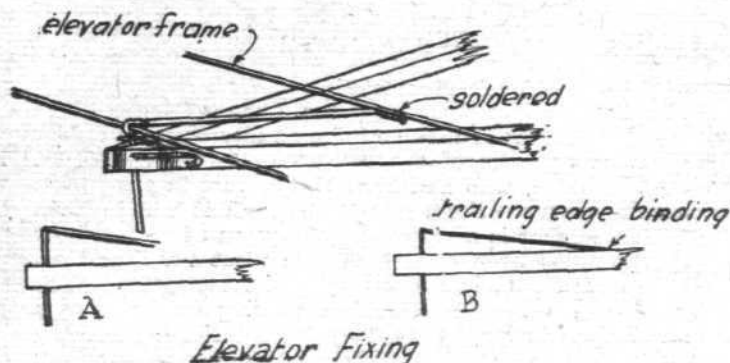


# MODELS

By F. J. CAMM

## An Elevator Adjustment Explained

THE sketch shows the elevator fixing I use on all my flying models. The wire stem projecting downwards in the centre of the front edge is formed from the wire of the centre rib of the elevator itself. Starting in the centre of the back edge, the complete form of the elevator is made. After making five bends the wire will be found to be back at the starting place. It is then bent again, and carried across, forming thereby the centre rib; and by bending round the front edge as shown and thence downwards, the stem is



formed. The angle which the stem makes with the elevator should be fairly acute, and at the point where it is bent round the front edge should be bound with florists' wire and soldered.

The acuteness of the angle of the stem will be found to provide an efficient fixing. The stem simply passes through a hole in the front of the frame or fuselage, and when it is pressed down to its proper angle the stem will grip in the hole quite firmly. In the small sketches A shows the stem in the hole, whilst B shows the angle opened out, pressing the back edge of the elevator down on the frame. The wire must be of the piano variety.

## Wanted—A Secretary for the K.M.A.A.

A SECRETARY for the re-formed Kite and Model Aeroplane Association is required. Will any interested person please communicate with Mr. W. H. Akehurst, 27, Victory Road, Wimbledon, London, S.W. 19? Also, will all those desirous of joining the Association also communicate with Mr. Akehurst?

## Aero Models and Research Club.

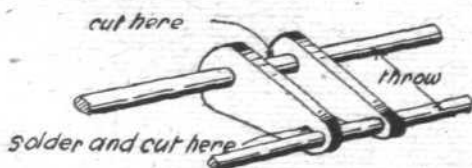
THE club has under consideration the formation of a ladies' section, and the members will be pleased to see more ladies at their flying ground at Parliament Hill Fields. Either the Secretary, Mr. C. J. Burchell, or his assistant, Mr. R. E. Coleman, will be glad to send particulars to anyone applying to them at 63, Belmont Street, Kentish Town, N.W. 5.

## Replies to Correspondents

H. L. (Burnley).—Don't be afraid to write on any matter relevant to this page.

W. P. (Shoebury).—Write c/o 51, Baker Street, London, N., for particulars of the plant. We understand, however, that no further supplies are available, as the demand has been disappointing.

A. M. (Southend).—The appended illustration shows how to make the crank for the compressed-air engine. Cut the two throws, sweat them together, and file them so that they are similar in shape. Then centre punch and drill for crank-



O.M. (Southend)

shaft and crankpin. Next, silver solder or braze on two pieces of silver steel in the holes, having first unsweated the two halves of the throw, as shown in the drawing. Afterwards trim up and cut where shown. A crank made on this principle is bound to be true.

S. R. N. (Maidstone).—Quite an interesting model. Thanks for the photos.

C. G. (Chatham), W. S. S. (Murrayfield), and K. C. W. (Weymouth).—I replied direct.

## Smoke Screen from Air Bombs

EXPERIMENTS have been conducted by the Bureau of Ordnance of the U.S. Navy Department with bombs, designed to create smoke screens, dropped from aircraft, and results are said to have been satisfactory. At first the bombs used were about 50 lb. in weight, but it is believed that bombs weighing not less than 100 lb. will prove to be more satisfactory.

## The U.S. Navy Dirigible

THE project of the U.S. Navy Department to build a rigid on Zeppelin lines, appears to be progressing. A message from Washington states that the plans have been perfected for an airship 560 ft. in length, to cost 1,750,000 dollars.

## Aerial Mail to Havana

A CONTRACT has recently been signed with the U.S. Postmaster-General for carrying the mail from Key West to Havana by seaplane for a period of one year, commencing on October 15 next. This is the first aerial mail contract made by the U.S. under the law authorising the Postmaster-General to contract to send foreign mails by aircraft. The machine to be used will be an F5L flying boat, with two Liberty motors, built to carry twelve passengers as well as freight.

## NEW COMPANY REGISTERED

FRANK NEEDHAM, LTD., Rugby Street, Broughton Lane, Manchester. —Capital £10,000, in £1 shares. Manufacturers of and dealers in engines, aeroplanes, etc. First directors, F. Needham and H. C. Bauly.

## AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motor.

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

### APPLIED FOR IN 1918

Published September 23, 1920

20,105. C. H. HAMILTON. Aeroplane wings. (150,006.)

### APPLIED FOR IN 1919

Published September 23, 1920

13,039. L. H. KENT and S. A. DE NORMANVILLE. Screens for aircraft. (150,047.)

13,137. F. L. M. BOOTHBY. Fuel tanks for aircraft. (150,053.)

14,400. B. W. REE and G. R. ROBERTS. Rotary I.C. engine. (150,094.)

14,743. L. C. BYGRAVE. Aerial navigation calculating instrument. (150,103.)

15,126. U.S. INDUSTRIAL ALCOHOL CO. Aeroplane motor fuel. (158,917.)

15,472. J. S. HOPGES. Drift indicators. (150,118.)

21,197. J. INNES. Fuel tanks for aircraft. (150,173.)

28,907. A. V. ROE. Wind-shields. (135,837.)

### APPLIED FOR IN 1920

Published September 23, 1920

7,243. K. SCHMITTNER and BALLONHULLEN GES. Parachute. (140,093.)

8,282. SOC. DES MOTEURS SATMSON. Radial-cyl. explosion m. (140,471.)

13,277. E. G. BERGMANN. Compasses. (144,634.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xix and xx).

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